The Builder.

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The Close of the Renaissance.

IN the third of his weighty and sumptuous volumes * M. Müntz brings to a close, we presume, his great history of the art of the Renaissance, a monumental work as remarkable for the thoughtfulness of its criticism as for the number and interest of its illustrations. And seeing that "Fin de la Renaissance" includes such names as Michelangelo, Titian, Tintoret, Serlio, Vignola, Palladio, and Cellini, one can hardly think of it as a period of decadence; though there is some falling off from the simplicity and directness of aim in the earlier art, its richness is that of full efflorescence, not of decay.

In estimating the spirit and character of the time, and its effect upon art, the author considers first the national sentiment of the sixteenth century in Italy, and suggests that we must regard this as specially marked by the substitution of intellectual *finesse* for the older qualities of courage and daring. It has been pretended, he says, quoting from a work of the late J. Addington Symonds ("Renaissance in Italy"), that the Italy of the Renaissance was dominated by the artistic idea. "C'est une confusion," says M. Müntz; it is only true in a wider sense than Symonds intended; it is not the fine arts, but the art of life as a whole, which was polished and refined in a manner which permeated every occupation of life, sculpture, painting, and architecture among them; it was the triumph of logic and reasoned-out perfection everywhere and in every occupation, whether it were that of a prince organising the government of his estates, or a general superintending a campaign. "Substitute the word *reason* for the word *art*, and we shall be at the truth." The effect of this spirit is seen as much in battle, public and private, as in painting. In war the courage and boldness of a former age had not disappeared, but had been transformed; for impetuosity was substituted military science: and so in private combat, the Italians of the period under review had entirely revived the study of swordsmanship, which attained in their hands a refinement, a "virtuosity" unknown before.* In fact, the sixteenth century in Italy showed about the nearest approach, in refinement of intellect, to the fifth century B.C. at Athens; there was a reason and a method for everything. The contrast in this respect between the earlier and later Italian Renaissance is strikingly exemplified in a great deal of the architecture of the two periods. The early Renaissance palaces showed rather boldness than refinement, the seeking of effect by great masses of wall and cornice; in the works of Palladio and his compeers we have rather the carefully-studied putting together of Classic detail in subjection to a carefully thought-out scheme, the production of architectural reasoning rather than architectural impulse.

M. Müntz devotes two chapters to the architecture of his period, which he regards as having accomplished the greatest work at the time of any of the arts; in spite of Titian and the tombs of the Medici. "In painting, if we except the schools of Venice and Parma" (rather a large exception), "no essential conquest had been added to the works of the masters of the age of gold. But in architecture, on the contrary, one would hardly comprehend the Renaissance if we pause at Bramante. It required another generation for the principles of antique art to penetrate into the spirit of society, to assert themselves with authority and *éclat*. The closing period of the Renaissance alone was to furnish builders sufficiently energetic to transform in a few decades whole quarters of a city, and architects capable of putting their stamp not only on isolated buildings, but on vast collections of buildings. . . . In a word, while painting and sculpture were lapsing more and more into frivolity, architecture was becoming more and more learned and serious."

What does the author mean by "learned" ("savante")? Apparently he means possessed by more knowledge of the antique forms and more learning and facility in applying them. It must be remembered, of course, that he is professedly writing about the Renaissance, and that in architecture the Renaissance meant the return to the antique types. But is not this rather a questionable position to take? It might be argued, on the contrary, that it was just here that architecture exhibited less of a genuine Renaissance—re-birth—than the other arts. Sculpture and painting had been extinct, but they arose with a life new in itself, not dependent on antique precedent. Architecture had never been extinct, in the same sense and degree, and what was called its renewed life was in great measure dependent on precedent, though, no doubt, it had its originality in a certain sense. In fact the author frankly states this, observing that one sign of the times was the great multiplication of theoretic treatises, and that the new use of engraving facilitated the task of the imitators; "they had not even occasion to interpret the text, to translate the formulæ into practice; it was sufficient to copy the figures." This is surely a very singular ground on which to rest the claim for the superior life of architecture over the other arts at the close of the Renaissance. It may be accepted in France; there is indeed a kind of "Prix de Rome" savour about it; it will hardly be accepted in England. The reverence accorded to Vitruvius is another sign of the times which M. Müntz does not forget; "Five Orders alone were admitted, not one more could be allowed; it is true that out of the combinations of these an infinite variety could be realised." This last remark is true no doubt, both as a general proposition and in regard to the works of the particular period under consideration. The personal quality in architectural design, in spite of the reverence for Vitruvius and the Orders, was very strongly developed at this period; and M. Müntz gives a salient instance of this variety in contrasting Michelangelo with Palladio, and the latter with Alessi:—.

"Prenons Michel-Ange et Palladio; peut on imaginer deux maitres plus dissemblables! L'un cherche avant tout le mouvement, l'autre avant tout l'harmonie, des lignes tranquilles et pures. Opposons maintenant Palladio à Alessi; ici encore quel contraste! le premier préconise l'Ordre colossal, encadrant jusqu'à deux ou trois étages dans une seule ordonnance de colonnes ou de pilastres; le second morcelle à l'infini et place l'effet dans la multiplicité des motifs. Bref, que l'on considère les proportions données aux differents membres de

* "Histoire de l'Art Pendant la Renaissance." Par Eugène Müntz, Membre de l'Institut, Conservateur des Collections de l'École Nationale des Beaux-Arts. III. "Italie: La Fin de la Renaissance" Paris: Hachette et Cie. 1895.

* In this connexion it is noticeable that in Shakespeare's references to fencing terms in "Romeo and Juliet," in the banter of Mercutio, the terms used are all Italian—"The immortal passado, the punto reverso," &c.; showing where Englishmen went for their lessons in this respect.

l'architecture ou la combinaison de ces membres les uns avec les autres, les innovations sont également importantes."

All this is true, and it is a point which has been perhaps rather overlooked by writers on architecture in considering the work of the later Renaissance architects. But it appears to be with M. Müntz rather a side issue after all; and he lays the greater stress on the point of "learning," the knowledge of antique precedent, and that is just what appears to us to have been, comparatively speaking, the deadening influence in Renaissance architecture.

The three prominent names among the architects who, as M. Müntz puts it, "codified" the Vitruvian rules of architecture for their generation, were, of course, Serlio, Vignola and Palladio, and M. Müntz devotes some consideration to the respective characteristics of their work. Serlio he considers had not risen to "the highth of this great argument," he was not correct enough; "Prenez le frontispiece de son premier (livre 1545): que d'agitation déjà, et comme on sent que Michel-Ange a passé par là!" Vignola's principal occupation was to establish the exact proportional measures of the component parts of an order, a pedantic study when carried as far as he carried it, and over which precious time and talents have been spent which might have been better employed; but which nevertheless has a value when not made too much of, as a training in the study of relative proportion in detail. M. Müntz does not forget to point out that these three reformers of architectural design according to antique models were acquainted only with Roman architecture, a fact sometimes overlooked. It seems extraordinary to us in the present day, that, even with the limited facilities of travel in the sixteenth century, no hint of the existence of the architectural treasures of Athens should have been wafted to these ardent Italian students of the antique. What might have been the effect on Renaissance architecture had Vignola and Palladio studied and measured the Parthenon and the Erechtheion, and what valuable records we might then have had in the shape of drawings of their state at that time! It is melancholy to think what opportunities were cut off by this curious ignorance on the part of the Renaissance architects of the monuments of a country so close to them.

Palladio M. Müntz credits with deeper insight than his two compeers; and moreover his studies took a more practical turn in the direction not only of correcting details, but of designing large groups of city architecture, in squares and wide streets which suggested a vast improvement on Mediæval habits of city building. Nevertheless, we hold that in the matter of design Palladio was one of the coldest, most formal, and least interesting of the prominent architects of the Renaissance, and it was perhaps to his influence more than that of anyone else that, as the author remarks, "the yoke of the order fell more and more heavily" on architecture, it enveloped everthing, and appeared everywhere. An exceptional treatment was sometimes the employment of a very heavy plain rusticated basement, with no suggestion of columnar expression at all, and the superposition of stories with small and gracefully-designed orders over this. M. Müntz cites and illustrates the Palazzo Uguccioni at Florence as an example of this treatment, which certainly promotes contrast, but is hardly to be approved; there is too little relation between the one and the other portion, and the upper portion has somewhat the appearance of a new building erected on the basement of an old one.

Among his remarks on decorative treatment in Renaissance architecture, the author refers to the use of Caryatides, and gives as an illustration the remarkable series of terminal figures on the front of the Leoni Palace at Milan, under the title "Les Carytides au XVI^{e} Siècle." But these are not Caryatides at all in the true sense, they are decorative terminal figures. The essential quality of a Caryatide figure is that it should be an architectural supporting member, which these are not; their heads are bowed forward under the cornice, but at some distance below it; they carry nothing; they are only alto-relief sculpture applied at certain points of the structure.

The critical remarks on the works of the leading architects of the period under review are of considerable interest, but we must confine ourselves here to a word on his judgment of Michelangelo's architectural productions. Everything in connexion with Michelangelo is of interest, on the one hand, and yet his claims to rank as a great architectural designer, on the other hand, are so disputable in many ways. The fancy and ingenuity with which the staircase of the Laurentian Library was designed have fascinated M. Müntz, and no doubt it is a piece of work in which one at once sees the hand of a man who thinks for himself and has his own way of doing things; yet, after all, is it not rather like making three staircases out of one? The library itself is chiefly remarkable for the design of its desks, the room itself is a tame and cold design. But it is with Michelangelo's work at St. Peter's that every one who speaks of him as an architect has mainly to deal. M. Müntz, while claiming for Michelangelo that he concentrated a design which Bramante had, as it were left scattered and loosely put together, admits that he substituted for Bramante's detail mouldings and reliefs "more vigorous, but also more heavy." But for the dome he has apparently unbounded admiration, and has no criticism to make upon it. We hardly think he will find this feeling echoed generally among architectural critics, though unquestionably the dome is the finest part of the structure, and unquestionably also its effect has been much spoiled by additions to the building for which Michelangelo was not responsible. One of the finest points about the design of the dome lies in the broad proportion given to the crowning lantern, in place of the narrow attenuated kind of structure commonly found in such a position; it was very likely this in some measure which aided in cracking the dome, but as a mere matter of design it is the best point in it, and is what more than anything else gives to St. Peter's dome its peculiar and unmistakable character. But we are surprised that M. Müntz has nothing to say in regard to, what we have always felt as a defect in the design, the manner in which the dome and drum are divided up from the very base of the drum into a series of sharply-marked vertical strips with no break of any kind; the coupled columns, the cornice breaking round them, then the pilasters of the attic, and the huge ribs up the dome, by which its domical form is cut up and interfered with. There is no continuous and unbroken horizontal line anywhere to stop and break this slicing up of the dome and its substructure. The conclusion with which the author sums up his remarks on St. Peter's, however, everyone will concur in: "Partout, on le voit, éclate le passion pour le colossal, à un degré où nul esprit humain n'a jamais atteint."

There is much more that is of interest in the architectural chapters of M. Müntz's book, which are only a small island in the bulky volume. The Caprarola Villa is an object of his admiration, and is specially illustrated. The hard stern concentrated face of its architect, Vignola, looks out of a frame on the opposite page; various portraits of other architects of the period form marginal illustrations to the text; many of them remarkable and powerful heads, among which the larger portrait of Sansovino, after Tintoret's painting, does not figure very well: there is a "five per cent." look about this eminent architect which seems to put him in a different category from his compeers.

In summing up his review of the architecture of the later Renaissance, the author suggests that we can discover in it two schools, quite distinct; one represented principally by Michelangelo, which searches especially for movement and effect and is the precursor of *rococo*; the other, inspired by Palladio, concerned especially with the preservation of correctness and balance of style; but both dominated by reason. Architectural design, to either school, was a matter of thought, not of impulse.

THE COMPETITION FOR THE ROTHERHITHE VESTRY HALL AND OFFICES.

ALTHOUGH the designs in this limited competition were sent in last September, the award has only recently been made, and the whole of the six sets of drawings have been on view during this week at the Public Library, Lower Road, Rotherhithe. The arrangement of the competition has several characteristics which are not very usual. The six competitors were invited by the Vestry, and each received the sum of £20 as a premium. The competitors entered with no assurance as to a professional assessor, and as far as can be ascertained the Vestry have been the sole judges of the designs. Though this course may be condemned in most cases, we are not prepared to disagree with the award, and the Vestry have selected a fair design, which is certainly the best amongst a poor lot. The conditions were fairly drawn, and required the provision of the following accommodation:—Vestry Hall for seventy-five members, Committee Room, and a Public Hall; Clerk's offices, Surveyor's offices, Medical Officer's and Sanitary Inspector's offices, with the usual accessory apartments and caretaker's quarters. The cost was limited to 15,000*l*. The invited competitors were Messrs. Murray & Foster, and Messrs. A. B. Thomas, Francis J. Smith, George Elkington, Charles Bell, and Robert Walker. By the award of the Vestry, the first place is allotted to Messrs. Murray & Foster's design, whilst those of Mr. Charles Bell and Mr. Francis J. Smith occupy respectively second and third places. The site calls for no special comment; it is rectangular in shape, of a uniform level, free from restrictions as to light, and bounded on three sides by streets, of which the Lower-road and Neptune-street are the most important.

Messrs. Murray & Foster, whose design has been selected, have submitted a carefully worked-out set of drawings. They have placed the entrance to offices in the centre of the Lower-road frontage, with a passage leading to an octagonal hall; from this a staircase leads to the Vestry Hall and other rooms on the first floor. The Public Hall is placed on the ground floor, with its long axis parallel to Neptune-street. The principal entrance to the hall is placed in centre of the Moodkee-street frontage, with stairs on each side to the gallery. The hall is of good proportions, and the original design shows a corridor on three sides, which is well lighted, and has emergency exits in convenient positions. This, no doubt, is a desirable arrangement, but it unfortunately sacrifices ground space, which is valuable. This appears to have been recognised, as an amended plan, which is attached, shows this space thrown into the hall, and with the emergency exits opening directly into the hall. The abolition of this corridor interferes slightly with the ladies' and gentlemen's cloak-rooms, which are placed at the corner of the Moodkee frontage. The plan of the stage shows a passage behind the platform communicating with retiring-rooms with lavatory accommodation on each side; there are also retiring- or dressing-rooms on the gallery level reached by circular staircases on either side. The Vestry Hall itself occupies the first floor facing towards the Lower-road. The Committee Room or Coroner's Court, with retiring- and cloak-rooms, are adjacent on the same floor. The second floor is

devoted to the caretaker's apartments, reached by a staircase which also serves those who wish to occupy the public gallery to the Vestry Hall. The drawings of the elevations are carefully prepared, and two perspectives are submitted which indicate a brick and stone treatment. The position of the tower appears to be unsatisfactory and out of proportion with the rest of the design, it appears to have been dragged in to meet the vestrymen's well-known love for a tower at any sacrifice. The design would not suffer by its omission. The proportions of the elevations otherwise are well arranged, though the Moodkee-street elevation degenerates somewhat in this respect.

Mr. Charles Bell, whose design is placed second, differs from the last in several material points. The Public Hall is relegated to the first floor, whilst the Vestry Hall is on the ground floor and faces Moodkee-street. The approach to the public hall is by stone stairs on each side, by which a balcony is reached in the centre of the Lower-road frontage, designed for uses of public speaking. The offices which occupy the ground floor have entrances from Lower-road and Neptune-street, each leading to a central main corridor. The offices appear to be well planned, so as to give ample space, and in this respect the design may claim superiority over Messrs. Murray & Foster's. The elevations are shown in perspectives in sepia, giving startling chiaroscuro effects. The whole design lacks repose. Examination of the drawings submitted by Mr. A. B. Thomas was attended with a good deal of pleasure, for though the planning is defective in one or two respects, the whole design has been worked out with great care. The elevations show much delicacy of feeling, and are not surpassed by any. Mr. Thomas has placed both his Vestry and Public Hall on the first floor, and has failed in giving good exits. The Committee Room is placed on the ground floor, and is too remote from the Vestry Hall. The accommodation in the public gallery to the Vestry Hall is not all that would be required. The hall is very large, and has a refreshment-room added to it, which would be a great convenience. The tower in this design occupies its proper place at the corner of the two principal elevations, and is a graceful composition.

Mr. Francis J. Smith's design places the offices on the ground floor, the Public Hall and Vestry Hall on the first floor, with a large Committee Room and retiring-room adjacent. The elevations are so poor that no further mention need be made of this design.

We pass by the design submitted by Mr. Robert Walker in despair. The very best plan would not atone for the vulgarity of the elevations.

Mr. Elkington's design is certainly better than the last. The Public Hall and Vestry Hall are placed on the first floor, the ground floor being devoted to the offices. The elevations are quiet and simple.

The award need not be found fault with: the assessors were not troubled with any architectural problem of difficult solution.

THE RESTORATION OF BRISTOL CATHEDRAL.—A meeting of the executive committee for the restoration of Bristol Cathedral was held at the Deanery on the 19th ult. It was reported that the Chapter had decided to light both the choir and nave by electricity, and that the work was in progress. The architect's designs for a dossal, side curtains, and altar rails were approved, and the estimates accepted. The dossal will be fixed behind the holy table, as a temporary substitute for a reredos, and the curtains will occupy the position of the north and south sedilia until these features of the restored choir can be provided. Mr. Pearson's drawing for the choir screen was then examined and approved. It was resolved to proceed at once with the erection of the base, or lower wall, of the screen, in the hope that funds would shortly be forthcoming to complete it. The question of laying out the west front with carriage-drives and grass also came under consideration. Mr. Pearson has stated that the effect of a grassy foreground would enhance the beauty of the west front, and greatly improve the general appearance.

NOTES.

IN our obituary column we have given a few particulars as to the life and work of the late Mr. Ewan Christian, whose death will be regretted by all who knew him, and who leaves behind him the reputation of an accomplished and conscientious architect and a kind-hearted and courteous gentleman. Mr. Christian was nearly 81 at the time of his death, and therefore cannot in one sense be said to have died prematurely, but one cannot but regret that he should not have lived to see the completion and opening of his most important building, the National Portrait Gallery. In the design of this Mr. Christian had contrived, with a great deal of judgment, to give a special treatment to the main block of building at the back of the National Gallery, while effecting the juncture of the old and new building on the east side in such a manner as to avoid any clashing with the architectural design of the National Gallery itself. The only point we think rather questionable is the appearance of the assemblage of pediments of different sizes on the intermediate portion of the building, as seen from the east. But the main block is a dignified structure suitable to its position, and if the interior planning and lighting has been carried out, as will probably be found to be the case, in a practically satisfactory manner, the building will be a worthy monument of its architect.

A PREPRINT of the forthcoming number of the *Mittheilungen* of the German Institute at Athens (xix., 4) has reached us, containing the official plan of the excavations on the west side of the Acropolis. It is now possible for all students of Athenian topography to see clearly what has been done, and what still remains, and to decide for themselves whether they consider Dr. Dörpfeld has succeeded in finding the ancient fountain of Kallirrhoë and establishing it in front of the old city gate. Whatever may be the final opinion on this point, happily many other points are settled beyond dispute. First and foremost the plan before us clearly indicates the direction of the Panathenaic way. On its left side is the ancient triangular precinct of the temple of Dionysos ἐν Λίμναις—of the Marshes. Enclosed within it is the substructure of a large altar, three mètres square, table-shaped, and in the north-west corner is a well-preserved wine-press, above which in more recent days a second wine-press of smaller dimensions had been erected. In the south corner of the precinct the substructure of a small, early temple has been laid bare; it consists of a square cella with pronaos facing south-east. The precinct walls are of calcareous, polygonal masonry, being in good preservation owing to the fact that the whole structure lay considerably below the level of the early road, and the *hieron* must in early days have fallen into ruin, and got filled in and built over. The later quadrangular Baccheion, identified by an inscription, occupies in part the same site. In the polygonal precinct we have unquestionably the boundary-wall of the ancient Lenaion, and the bearing of this on the description of the ancient *polis* by Thucydides is evident. Immediately opposite the Lenaion, on the other side of the way, is a building, the purport of which is not yet clear. It may be a private house. Its chief interest lies in the fact that it contains what is probably the earliest Greek mosaic pavement extant. The walls of the building, which are of the same date as the pavement, are polygonal. Further on to the left of the road, going towards the Acropolis, is the precinct of Asklepios, which we drew attention to last year. The excavations so far have been largely supported by private subscriptions and under serious disadvantages; negotiations had to be carried on with individual landowners, and each piece of ground excavated had to be filled in as soon as examined. Now the important discoveries made have induced the Greek Government to hand over the whole of the western slope of the Acropolis to the Germans for excavation, and Dr. Dörpfeld will proceed at once to the unexplored "Eleusinion."

THE second reading in the House of Commons of the Lambeth Water Company (Transfer) Bill last week is an important matter. It was the first of the Bills promoted by the London County Council to transfer the water-supply to them. By the second reading of the Bill two things are clear. First, that the House of Commons approves of the principle of the supply of water to London being placed under the control of a public body; and secondly, that it is satisfied that that body should be the County Council. The Committee before which the Bill will come must settle the details of the transfer, and we may expect a long and troublesome discussion and examination of the present project. While we altogether approve of the transfer of the supply of water to a public body, we cannot wholly agree with the reasoning which would make it the County Council. In the large provincial towns the Corporation consists of many of the leading business men of the town: business men are conspicuous by their absence from the County Council. Again, London is much bigger than Birmingham, and at present the County Council has more than enough to occupy it. Again, the water-supply of London should be in the same hands as that of the surrounding districts, and this is a strong reason why there should be a central body for London and the surrounding parts, which should have jurisdiction beyond the limit of the County Council, and should represent a larger area. For the moment, however, the matter has moved on two steps by the recent action of the House of Commons. We confess that a discussion in a desultory fashion on a private Bill is hardly the way in which we should have liked to see a matter of such great importance brought before Parliament.

THE Railway Commissioners have several important test cases pending at the present time, and a great deal of preliminary skirmishing is going on between the counsel engaged upon various questions which have arisen as to the scope and purport of the new Acts. A point of considerable public importance was decided by the President of the Commission on Saturday, in connexion with an action brought by the Mansion House Association against the Great Western Railway Company. This company seems to have taken advantage of their new charging powers to a considerable extent, and have raised the whole of their rates for several "classes" between London and various towns on their line. These classes include many hundreds of articles—indeed, almost every description of traffic except that covered by special rates, these latter not having, apparently, been disturbed. The railway company are called upon to establish the reasonableness of these wholesale increases, a certain number of typical stations being taken; but they asked for more specific particulars, including the names of the individual traders aggrieved. The complainants, of course, declined to comply, and were upheld in their refusal by the Registrar of the Court. The company, however, appealed against this decision, but it was confirmed by Mr. Justice Collins on Saturday, after a long discussion in which Sir Richard Webster, Mr. Balfour Browne, and the Judge himself took part. The companies evidently intend to fight these test cases step by step, and leave was obtained to appeal further upon this point. It is quite clear that public bodies have now a *locus standi* in respect of proceedings under the Railway and Canal Traffic Acts, and it is competent for traders to avail themselves of this provision. It also seems reasonable to look to a railway company for justification of all advanced rates, whether considered singly or *en bloc*. There may be some difficulty in the

latter case, but the rates complained of being raised in the wholesale manner described, this application was also framed on general lines.

THE law in regard to nuisances to residential property has been long settled in its general principles. The chief difficulty at the present day is in its application to particular circumstances. The case of Husey *v.* Baily, recently decided by Mr. Justice Chitty, is an illustration of this. The defendant built a villa and workshop close to the plaintiff's residence, and in the workshop he placed two circular saws, and it was the noise of these saws which, as alleged by the plaintiff, constituted a nuisance. Most persons know the various noises which are caused by saws—the buzz and the shriek; when these continue from six in the morning to six in the evening, at a distance of some sixty yards, it is pretty clear that the judge was right in holding that the plaintiff was entitled to relief. The case is an example of the result of what may be called cumulative acts of a disagreeable character becoming a legal nuisance. It is doubtful if the action of a saw for an hour in the day could be regarded as a nuisance, but when the noise continues for twelve hours the matter is different. The case of Lambton *v.* Mellish, which was decided by Mr. Justice Chitty last year, is an even stronger example of this. The defendant in that case had merry-go-rounds on the ground for the pleasure of excursionists, and these were alleged to be a nuisance by the plaintiff, who lived at a distance of 70 yds. In the judgment occurs the passage which is of practical interest: "A man may tolerate a nuisance for a short period. A passer-by would not find any nuisance in these organs; but the case is very different when the noise has to be continuously endured." Again, speaking of a noise made personally by two men, Mr. Justice Chitty said: "Each of the men is making a noise, and each is adding his quantum, until the whole constitutes a nuisance." These illustrations show the tendency of the law to protect owners of houses against prolonged inconveniences which in the aggregate amount to a legal nuisance. A still stronger illustration was given by the late Lord Justice James in reference to the obstruction of a right-of-way. One man, he said, may leave a wheel-barrow standing on a way, and it may be no appreciable inconvenience, but if a hundred do so then a nuisance is caused which the law will stop. These matters are well worthy of the attention of householders and their neighbours. The cases referred to are of good augury for household comfort, since they show that the law will not tolerate the defence that what is merely an inconvenience if it occurs for a short time retains the same character if it is continued hour after hour.

WE receive intimations that the Building Trades Exhibition to be opened this spring at the Agricultural Hall is to be superior to its predecessors, that no less than ten firms will show brickmaking machinery in motion, and that Messrs. Kirkaldy & Sons and Messrs. Faija & Co. are arranging a series of tests of bricks, cement, and other materials. These should be of interest. We have heard so many annual promises of this kind that we get rather sceptical, but perhaps things will be better this year. If so, it is to be hoped that those concerned with these exhibitions will be wise enough not to attempt repeating them annually. Any such attempt is bound to be a failure, because there is not a sufficient amount of new invention or new appliances in connexion with building to supply matter for a large annual exhibition. The result is (what we have already seen) that the thing degenerates into an annual exhibition of advertising stands, where there is scarcely anything new to be seen. A good building trades exhibition might very well be held once in five years, and then there would probably be matter of interest in each exhibition, and it would be worth doing. But it is not worth while to attempt it every year.

THE opening of the garden of Lincoln's Inn-fields to the public on Saturday last is an event upon which London may be congratulated. In these "Notes" we have for several years consistently advocated the opening of these grounds to the public in the interests of all classes. The reasons for this course have been so clear that our only regret is that the opening has been so long opposed by those who had some private rights over these gardens. The main want of this part of London now is the making of some direct communication between Holborn and Lincoln's Inn-fields. There should be direct access from this square to Holborn. This could easily be made at the north-east or north-west ends of the square, and there can be no doubt that of these places the north-east end is preferable, as there would then be a straight road from Holborn to the Carey-street entrance of the Law Courts.

A PUBLIC meeting held a few years ago at Rothwell, Northants, resolved to commemorate Her Majesty's Jubilee by completing the Market-house. The Local Board have now undertaken to convert it for purposes of a public library and offices. They have appointed Messrs. Gotch & Saunders, of Kettering, as the architects; and the tender for 753*l.* of Mr. J. C. Neal, of Kettering, is accepted. The house* was erected in the interval 1575-80 by Sir Thomas Tresham, who in 1593-95 built the Triangular Lodge and enlarged his own home (to which the Cokaynes added) at Rushton; he also is believed to have begun the Lyveden New Bield. Perhaps designed by John Thorpe, and faced with Stanion or Weldon ashlar, the Market-house has a ground-story entered through eight wide semi-circular arches, and an upper story (without floor or roof), to be gained from within the open arcade by a staircase in a rounded projection at the south-east angle. Ornamented pilasters are attached to each story, the two sides having an elevation not unlike the façade of Brescia Town Hall, which we illustrated on February 23 last. A dedicatory Latin inscription is cut in the lower frieze; the upper and deeper frieze contains a series of shields tricked with the coat-arms of Tresham's friends, whom, as he here says, he thus purposed to honour; one shield displays the arms of the Humphrey Stafford who employed Thorpe to design Kirby, 1570.

THE inconvenience and unfairness of requiring a deposit fee from architects for the instructions for a competition, and not returning it except when a set of plans are sent in, is illustrated in a brief correspondence which has been sent to us in regard to the Penzance Hospital. An architect asked for information as to the number of beds required, in order to judge whether the limited sum named in the advertisement would suffice for any properly-planned and constructed building, and was merely told that he would have the information on sending his guinea. As the object was, in fact, to know whether it was worth while to go into the competition at all, the answer was of course merely an invitation to gamble away a guinea on a chance. Such foolish conditions may keep good men out of a competition.

THE Exhibition of Water-Colours of the Dudley Gallery Art Society contains a good many very pleasant small drawings and sketches, and some of exceptional excellence. Among these latter are the studies of shipping subjects by Miss Nora Davison whose talent in this class of subject we have before remarked; Miss Margaret Bernard's broadly-executed sketches, especially "Haymaking, Dorset"; Mr. J. Carlisle's "Hampstead Heath"; Mr. Newton Benett's charming little drawing of "Abingdon"; and Mr. Geo. Marks's "Village Street, Sutton Courtney."

* See Mr. Gotch's measured drawings, with plans, the *Builder*, March 8, 1890.

A PENNY architectural journal recently started has devoted an article to attacking the editor of this journal, and, among other things, endeavouring to convey the impression that he had sent a gratuitously discourteous reply to a request to print his paper on "London Bridges," threatening the editor of the penny journal with legal proceedings it he printed it. The editor of the latter did not of course think it necessary to inform his readers that this threat was only held out after he had in two weeks purloined no less than six or seven columns of matter from the pages of the *Builder*,* and that the legal representatives of the *Builder* had found it necessary to serve him with a formal warning that any future appropriation of our matter would be the subject of summary legal proceedings. These threats seem to have stopped his depredations, and he has endeavoured to revenge himself for this by printing and circulating an insulting article on the editor of the journal whose columns he has been pillaging, and who has given him a practical and, no doubt, unwelcome lesson on the distinction between *meum* and *tuum*.

LETTER FROM PARIS.

As has already been mentioned in our Foreign Notes, four architects, MM. Hénard, Sortais, Tronchet, and Varcollier, have been appointed to assist M. Bouvard in elaborating the final plan for the Exhibition of 1900, which M. Picard proposes to lay before the Chambers this year, before the Parliamentary vacation. On this account the scheme for the new avenue between the Champs Elysées and the Seine is to be immediately taken into consideration, as well as the construction of the monumental bridge over the Seine on the axis of the Esplanade des Invalides. This bridge will not carry any superstructure such as will intercept the view up the river. The Palais de l'Industrie, it appears now, will necessarily disappear, as well as the pavilion of the Ville de Paris, and will be replaced by a new building on the alignment of the future avenue. The principal entrance to the Exhibition will be on the Place de la Concorde; and the buildings devoted to decorative exhibits will be placed along the line of the Cour-la-Reine and the Esplanade.

The Electricity building will be as near as possible to the entrance, probably on the same esplanade. The banks of the Seine will be lined with decorative façades, as much varied as possible, but kept sufficiently back from the bank to allow space for the circulation of a crowd in front of them, which was not possible in the 1889 Exhibition. The special exhibitions will be arranged around the Eiffel Tower, which after all it appears is not to be interfered with, unless the Society to which it belongs think proper to redecorate it for the occasion.

The Galerie des Machines will also be retained, but modified and decorated, The Palais des Beaux-Arts and des Arts Libéreaux, on the other hand, are to be removed, as well as the central dome, the "Thirty-mètre Gallery," and the existing terraces round the gardens of the Champ de Mars, the varying levels of which might be the cause of accidents on fête-days. Between the Galerie des Machines and the Seine, therefore, there will be an immense open space, forming an unbroken inclined plane, laid out in parterres and ornamented with sculpture. In front of the Galerie des Machines there will be a monumental fountain with a basin. Nothing but the Eiffel Tower will interrupt the view from the lower end of the Champ de Mars to the Trocadéro, in which latter the Colonial Exhibition will be

* To wit: Two long reports of Professor Aitchison's lectures, only to be got from our columns; the whole of our condensed report of three papers read at the Institute, reprinted word for word; two paragraphs of special news, one paid for by us, the other furnished specially to us by a member of the A.A. Discussion Section; "Prices Current of Materials," compiled for our columns from sources available to us; this last was graciously headed "from the *Builder*," an attention which makes no practical difference; we do not go to the trouble of compiling them for other journals to use them. Will anyone wonder that after this we took a peremptory stand against further use of our matter?

installed. At this point there is no thought of constructing a new bridge, as the Pont d'Iena is sufficient for all purposes of communication between the two banks. This general sketch of the proposed arrangement corresponds, it will be observed, pretty closely with the design by M. Hénard, published in the *Builder* of Feb. 16; and the selection of this architect as a collaborator of M. Bouvard seems to indicate that his design was regarded with special favour.

One of the first acts of the new Minister of Commerce and Industry, M. André Lebon, has been to address a circular to the Prefects of Departments inviting them to form departmental committees for the organisation of the 1900 Exhibition. These committees will have important work chiefly in connexion with the retrospective exhibition of industrial products. The exhibition of art will be limited to the works of the nineteenth century, while the historic exhibition of ancient art will embrace an *ensemble* of decorative and industrial art from the origin of French civilisation down to the year 1799. A methodical and chronological grouping will enable the visitors to follow the changes of taste and form, and the progress in technique of different arts, as well as the modification of French manners, habits, and requirements at different times. A great deal of research will be necessary to carry out this programme, and it is here that the labours of the departmental committees will be of the greatest service.

The 1900 Exhibition therefore is fairly started on its preparations, and everything promises well if we can only have sufficient means of communication. But, thanks to the veto of the Municipal Council, we cannot count on a metropolitan railway. The only resource left is to finish the railway from Moulineaux to the Invalides as soon as possible, to duplicate the existing line from Auteuil, and to increase the service of mechanical tramways, by arranging for the traction of several carriages by one motor, as in the new line from the Louvre to Versailles. These will only be half measures, in presence of the probable enormous influx of visitors, but they will be an improvement on the present state of locomotion, which is quite unworthy of such a city as Paris.

We have already described the intended monument to de Maupassant in the Parc Monceau. There is now talk of erecting in the same park a monument to Georges Bizet, the composer of "Carmen"; and a committee has also been formed to erect there a monument to Corot. This monument, executed in coloured glazed ware by M. Cros, the sculptor, will be placed in the middle of the colonnade known as the "Naumachie." When we add the monument to Gounod, there will be in the Parc Monceau a kind of open-air "Poet's Corner." Some people profess to think that the pretty little park will have, with all these monuments, a kind of cemetery aspect; but there is hardly any reason for such an apprehension. The monuments to Delacroix and de Banville, in the Luxembourg Gardens, do not suggest any funereal ideas, and on the contrary, contribute to the decoration of the promenade. It will be the same in the Parc Monceau; and the selection of M. Formigé, who is architect for the Promenades of Paris, as the architect for the Gounod monument, gives one every reason to expect a good result.

The demolition of property will shortly be commenced for the prolongation of Rue Reaumur, which at present stops at Rue St. Denis, and the completed length of which is to extend to the Place de la Bourse, opposite the Rue du Quatre Septembre. These operations will obliterate several old streets, and will open out one of the towers of St. Martin de Champs, at present built up among a mass of inferior houses. This tower, square on plan and 15 to 20 mètres in height, is near the ancient refectory of the priory. It dates from the commencement of the eleventh century, and is decorated with arcades springing from capitals carved with heads, animal subjects, and foliage. At the base of the tower are the remains of an ancient chapel; the mouldings and ornaments show its date as the XIVth century; it is at present occupied as a machinery shop. When disengaged and restored under the care of the "Commission des Monuments Historiques," the tower will be recognised as one of the most curious monuments of Old Paris.*

The Minister of Instruction and Fine Art has been presented with a petition from the numerous admirers of the works of M. Paul Chenavard, the painter—now eighty-eight years of age—asking that his large composition, "Le Philosophie de l'Histoire," should be executed in mosaic at the place already indicated by the painter, under the cupola of the Pantheon. In fact, Chenavard was to have had the decoration of the Pantheon to himself. But his designs were not carried out, and were collected about ten years ago in the Museum bearing his name and founded by him, at Lyons.

The Museums Administration has just purchased from Mdme. Carpeaux the series of models of busts executed by her late husband, and which were exhibited two years ago at the École des Beaux-Arts. These works, to the number of ten, include eight busts, two of them after Napoleon III., one after Dumas *fils*, and a sculpture sketch entitled the "Jeune Mère." These will be placed along with the other works of Carpeaux now in the Louvre. The room called the "Seven-mètre Gallery" at the Louvre, where the early pictures are hung, has been re-arranged with very good result. The new installation allows the works of Cimabue, Giotto, Bartolo, &c, which for many years have been hung too high and in a bad light, to be much better seen. This new classification, however, is only an instalment of a much more extensive reform in the hanging at the Louvre, which ought to be carried out to its completion without delay.

The "Femmes Peintres et Sculpteurs" will open their annual exhibition in a few days. Among minor exhibitions now open is one of the landscapes of M. Ernest Baillet, at the Georges Petit Gallery, and, at the Théâtre d'Application in Rue St. Lazare, that of the works of MM. Schuller and Armand Berton.

M. Tony Noël, holder of the Grand Prix de Rome, has been commissioned to execute a bust of M. Faure, the President of the Republic.

We must record the promulgation of a law long desired by artists, and which will give them some defence against the frauds often practised at their expense. According to the terms of this law, those who fraudulently place an artist's name on any work of art, or those who imitate the signature of an artist in order to deceive a purchaser, will be liable to a term of imprisonment varying from one to five years, and a fine of from 16 to 3,000 francs, according to circumstances, without prejudice as to procedure against them for damages. The same law will apply to the putting up for sale of objects of art under forged signatures.

* On this side of the Channel, some of us would perhaps think that this "restoration" is just what would prevent its being recognised as such.—ED.

THE ADVANCEMENT OF ARCHITECTURE.*

Planning.

BY PROFESSOR AITCHISON, A.R.A.

THE art of planning, when it is taken in its most comprehensive sense, means the devising of the whole building, not perhaps in all its details, but certainly in its main masses; and if we credit the architect who plans with a knowledge of construction, and of the appropriate forms the construction should take, we may say that the plan comprehends the effect of the whole structure.

I may mention that the present Persian architects only give a plan which includes the stalactite vaulting and cornices; the builder knows the height of the doors, window-sills, and windows; the shape of the arches and of the stalactites; and it is only when some new pattern of vaulting, a monogram, or some new ornament is wanted that any elevation or detail is given. When the architect has got his instructions, and the plan is made, it is shown to the client, and he is asked what vaulting he would like, all the usual patterns being known by name. Should the client be a man of taste or fashion, who wants a new pattern of vaulting, the architect produces his pattern-book, and shows his own designs for new sorts of vaults. This method of keeping patterns on hand was rife two generations ago in London; architects who went out to dinner kept designs for a house, a mansion, or a chapel in their pocket-books, to show a possible client; and it has not yet quite died out. This practice seems to be in vogue in our colonies. Froude, in his "Oceana," tells us this about the Government House at Victoria (p. 96): "An architect was selected, a site was chosen, and the architect, as I heard the story, was directed to produce a plan. He sketched a Gothic construction, which was wisely disapproved as out of character with the climate. The Minister of Public Works asked to look at his book of designs. On the first page was Osborne. 'Something like that,' the Minister said, 'on a scale slightly reduced'; and the result was the present palace—for such it is—not a very handsome building, in some aspects even ugly, but large and imposing."

There are two transcendental possibilities attaching to the art of planning: 1st, that of grouping in the most convenient way the various chambers of a large utilitarian building, so that the plan not only looks organised but inevitable; and 2nd, in the case of buildings for high ideal purposes, not only devising a well-organised plan but a plan containing such forms and arrangements as will evoke the proper emotions. I am not sure that every building, every structure, and every tool and utensil will not at some future time be endowed with a certain amount of comeliness, if not of beauty, except such as are intended to create aversion, fear, horror, or disgust. We see that Nature tries to effect this in her works, and, probably, when she has not succeeded, the conditions may render it impossible; but this may not always be the case, and Nature may become wiser or more skilful, or the conditions may become more favourable; and if not on this earth, in some other sun or planet. Considering that man is but a complex machine, most beautiful when he becomes most perfect for the work he has to do, we may hope that when we get wiser and have more command over our materials, engineering works, machinery, musical instruments, and utensils may become beautiful too. I shall, however, confine myself not only to present possibilities, but to those plans that are wholly or partially devoted to high ideal ends. I think it may be said that those buildings that were devoted to religious uses were for the highest ideal ends during the ages of faith; whether that faith was pagan, Jewish, Buddhist, Mohammedan, or Christian. It is not easy to say what was considered the highest end to which buildings should be devoted in ages when faith did not prevail. I think we may take Juvenal's remark, that no boy above fourteen ("Sat." 2, 152) believed in the stories about the gods, as showing an age that was not one of faith, though we may possibly accept Gibbon's dictum "that the various modes of worship which prevailed in the Roman world were all considered by the people as equally true, by the philosophers as equally false, and by the magistrates as equally useful." Vespasian built the Colosseum over a part of Nero's golden house, and though the use to which the Colosseum was put was popular, it cannot be looked on as embodying a high ideal.

Julius Cæsar, Augustus, Nerva, Trajan, and others built forums, and most of the forums contained a basilica, while Constantine finished the basilica of Maxentius. Vast and important baths were built from the time of Augustus to that of Constantine, and these baths had adjuncts of gymnasiums, lecture-halls, libraries, and concert-rooms, so there was everything comprised in them that invigorated and perfected the body, and refreshed and stimulated the mind. We now know that the Pantheon, a temple to all the gods, never was the laconicum of Agrippa's baths, and was not built earlier than the age of Hadrian. The palaces built by the Emperors, from the days of Augustus to those of Septimius Severus, if not representing the highest ideals, were for a very high one, for they did not represent the power and magnificence of a single person, but the majesty of Rome. That the Emperors were considered as the incarnation of the power and majesty of Rome is, I think, shown by their deification. I think, too, that we may consider the ceremonial employed at the public interviews of foreigners with the Emperor was very elaborate, at least among the later Emperors; for, till the days of Nero, the position of the Emperors was not very secure, and they naturally sought to avoid envy and hatred by affected simplicity. Even in the days of Augustus the number of menial slaves was enormous; one instance may suffice—Livia had one slave, whose sole business was to comb her lapdog.

As regards the accommodation, there must have been the private rooms of the Emperor and Empress, the rooms for the public receptions of the great Officers of State, as well as State dining-rooms; and there were always cases reserved for the Emperor's decision, those particularly relating to the feudatory kings. We know little about the uses of the various rooms of the palaces, but there is a well designed air in the plans of the palaces, as may be seen in the Palace of Augustus, published by Guattani; the restoration of the Flavian Palaces by M. Deglane, and in the villa of the ex-Emperor Diocletian at Spalato, restored by Robert Adam.

Before saying anything about the plans of buildings that have struck me, I will say some-

* Being the fifth Royal Academy Lecture on Architecture this Session. Delivered on Monday evening, February 11, 1895.

thing on the art of planning. Certain requirements have to be provided for in every building, utilitarian, emotional, or compound. The more perfectly utilitarian the building is, the more exactly must the needs be met. This is as useful a practice for an architect, as the attempt to make a maxim is for a writer; for in a maxim you do not want a single unnecessary word, so that both exercises teach conciseness in their separate arts. You see in most animals all the organs so packed as to make a symmetrical whole of some generic type. We cannot as a rule improve upon Nature, so it is well that our plans for practice should be in a town where everything must be included in the given space; for in the country, where land is cheaper, it is enticing to one's idleness to stick on parts outside instead of recasting the plan; at least, if we do not consider that Nature never skewers on the giblets of a fowl as the cook does for roasting. Supposing the utilitarian plan is of many parts, a first-rate planner will generally be able to organise it so as make a whole, and thus prevent it from showing that it has been made off-hand from the mere aggregation of the bits of card representing rooms. Mr. Macvicar Anderson, the ex-President of the Royal Institution of British Architects, delivered an excellent address on planning in 1892, from which I have been allowed to quote. He says: "I would say, further, that a plan, to be good, must be simple. No doubt the arrangement of some buildings is necessarily more elaborate than that of others; but you may take it as an unerring guide that when you find a plan becoming complicated and confused, you are on the wrong tack. I have seen an artist, after hours of work, wipe from his canvas all he had painted, and then make a fresh start with manifest advantage and no real loss of time; so, when your planning results in complication, your best course is ruthlessly to obliterate what you have done, and begin *de novo*. Nothing will compensate for the absence of simplicity in a plan. This is a golden test which I have never hesitated to apply, and I speak from no inconsiderable experience."

On the subject of simplicity I give you another quotation, though I know that quotations are unpopular, for a lecturer *should* know everything; but one is in this dilemma if one does not quote, one must either deprive you of information or adapt it as one's own; in the first case it is hardly fair to you, in the latter it is hardly fair to the discoverer. M. Anatole France says: "The only difficulty is to define the simple form, and it must be allowed that this difficulty is great.

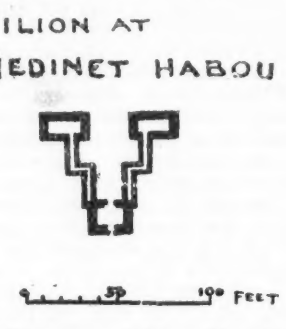
Nature as we know her in the medium set apart for life offers us nothing simple, and art cannot pretend to greater simplicity than Nature. Still we understand well enough when we say that such a style is simple and that another is not.

I should say then that if there is not really a simple style there are styles that seem simple, and that it is precisely to them that youth and duration seem to be attached. There remains nothing then but to seek whence comes this happy semblance, and one doubtless thinks that they owe it not to this that they are less rich than the others in different elements, but to their forming a whole where all the parts are so perfectly melted together that one can no longer distinguish them. A good style, in fact, is like this ray of light which comes through my windows as I am writing, and which owes its pure clearness to the intimate union of the seven colours of which it is made up. The simple style is like white light. It is complex, but it does not seem so."—"Le Jardin d'Epicure."

As an instance of a plan of most charming simplicity, I may mention the baths of Agrippa,* pulled down for a palace in the sixteenth century. Fortunately we have in Palladio's drawings all the plans of the baths that were standing in his day, from Agrippa's to Constantine's; and though the building of these ranged over three hundred years, in which time certain modifications probably took place in the exercises, entertainments, and methods of bathing, they were for one purpose; they are in this respect like the Gothic cathedrals, all built for one purpose, though the ritual differed at different times. Thanks to Abel Blouet, as well as to the sublime ruins, the baths of Caracalla† are mostly put forward as a type of planning, though I think the plan of them is by no means so good as that of Agrippa's; for the plan has a look of being sought for, while that of Agrippa's has a look of perfect simplicity and inevitableness. This look of naturalness and simplicity is the stamp of perfection in every fine art.

* Published in the *Builder* of March 2, 1889.
† Published in the *Builder* of February 16, 1889.

The secret of getting an ordinarily good and organised plan is the taking of infinite trouble; but the masterly plans of the world are due to that and to genius as well. There is a comic-looking secular Egyptian plan of a pavilion at Medinet Habou,* that looks as if it were made



from the curling-tongs of Pharaoh's wig; but probably if we were familiar with the site and the purpose, it may have taken this form from its use, and the desire for air and shade. The plan of the Pantheon is that of a single and simple structure, but it has the merit of being fine even on paper. All the chapels form effective masses of shade round the well-lit circle, while the monolithic columns of Giallo antico or pavonazetto that continue the circle and form the fronts of the recesses, greatly add to the interest and effect. The marvellous effect of the interior is, however, mainly due to the lighting.

All praise, however, is due to the unknown architect who saw how solemn was the effect of the laconicum of a bath, and used the shape for this high æsthetic purpose. Those who have not been to Rome, have doubtless seen it in the marvellous drawings of M. Chedanne.

It at first seems curious to us that some of the rooms of Augustus' palace have a Byzantine air, until we reflect that Constantine's buildings at his new capital were copies of Roman ones, and that Greek or Roman architects probably settled at Byzantium as soon as it became the metropolis. Some of the rooms of this palace, on the lower level adjoining the grounds of the new temple of Vesta, are of what we should call Byzantine shapes, *i.e.*, are full of large niches or apses not unlike the golden Throne Room of the Imperial Palace at Byzantium.† The centre room of those at the Palace of Augustus is said to have been used by him as a hall of justice. Drapery was then much more used for division than it is now, and it is quite possible that these niches held officers, servants, guards, or things wanted. At the golden Throne Room of Byzantium the face of each niche was closed by curtains, and used for some special purpose. At Diocletian's Villa at Spalato there were triconques‡—that is, rooms of three apses, with columns forming the straight side—to the suites of baths both for the ex-Emperor and Empress; whether they were ante-chambers or cooling-rooms is not clear, but they resemble the triconque§ at the Imperial Palace at Byzantium. As regards the plans of large buildings containing many rooms, the only test of their goodness is the familiar one of the pudding. If persons can easily find their way from the entrance to the rooms they want, and find their way out again, and if those who use the rooms find them of the shape and size wanted and conveniently situated, the plan is good. The barristers engaged at the Houses of Parliament are loud in their praises of Sir Charles Barry's plan. Unless you have great experience of the working of any large building, you can only judge of a plan by its look of well-organised simplicity, though when the plan is on an ugly and irregular piece of ground you can see the skill displayed. The difficulty of forming a correct judgment of a plan on paper, without having used the building, may be well illustrated by a door in some awkward place in a plan you have arranged; you may take hours in considering which way it should be hung to be most convenient; but no sooner is the building used than the occupier at once finds the convenient way, and woe betide the architect if he has arranged it wrongly: "Incompetent blockhead!" will be the mildest objurgation. I may say that in a hall where there are many doors it is well to mark by architectural enrichments—by having the door in two leaves or higher—the principal doorway to the inside or to the first-floor staircase. In a cold and windy situation an architect made an inner hall in which there were seven doors all alike. When the house was virtually completed and the architect was about to pay his visit, the owner, who lived near and had at last learned which was the door to the inside, ordered the clerk of the works to have all the doors closed; and when the architect came in he said it would be impertinent to open the right door for the designer of the house. The architect thought for a moment, and then made for one of the doors, this went to the basement; he then tried two others unsuccessfully, and was obliged to get the clerk of the works to show him the right one.

* See Fergusson's "History of Architecture," vol. i., p. 131. 1874.
† No. 95. Imperial Palace at Constantinople, *Builder*, February 21, 1891.
‡ *Builder*, March 1, 1890.
§ *Builder*, February 21, 1891. Room No. 73.

By confining myself to those places I have seen that were made for emotional effect, one can at least say what effect the arrangement has had on oneself, but in this case many things besides the plan combine to produce the effect, and particularly the lighting. The strangest effect I have noticed is the interior of the mosque at Cordova; the forest of columns form diagonal vistas which gives a peculiar and striking air to it, and it is like nothing else I have seen; still there is nothing particularly beautiful or artistic in the mosque beyond the rarity and extraordinary strangeness of the multitudinous columns and the strange network above and between them. The building that affected me most by the unusual shapes used and by the grandeur of their sizes was Santa Sophia. The apses have a diameter of over 100 ft., while the smaller ones cut out of them are upwards of 40 ft. across. As I have said before, size and vastness have a great effect on the human mind quite irrespective of any reflection, and when we do reflect it seems reasonable enough, for besides showing the expenditure of great wealth and the labour of innumerable men, it shows superior capacity in the architect. The dealing with large masses successfully is in itself a great feat. A chair, though it involves many statical problems, is left to the experience of the chairmaker; but one in stone for a marble colossus ten times lifesize would require the highest knowledge of statics and of the strength of materials. You know that a tree-stump, or some other support, is put under the belly of a marble horse with a rider.

The immensity of Santa Sophia seems to be the great factor in the impression, but to be sure of this we want to see the same building in bare stone, for doubtless the skilful lighting, beauty of colour, and costliness of material are aids to the success; still, the Church of Saint Sergius and Bacchus, though almost the same in form as Santa Sophia, produces a very feeble impression, as compared with the grand cathedral of which it was the prototype. I have always longed to see St. Front at Perigueux, as there you have Saint Mark's without any of its coloured marbles and carving, and the gorgeous effect of coloured mosaic on a gold ground.

Almost all the ancient churches and basilicas of Italy that I have seen, when they have not been too much bedevilled, have a very impressive effect.

Where the choir is considerably raised above the nave, and reached by flights of steps, it arrests our attention by its novelty. San Miniato at Florence, San Lorenzo outside the walls at Rome, and the Renaissance Church of Santa Maria dei Miracoli at Venice, have this feature. Many of the early churches, such as those at Torcello, San Ambrogio at Milan, San Clemente, Santa Maria in Cosmedin, and Santa Maria in Trastevere at Rome, have a solemn and dignified appearance, even when the workmanship is not good; probably the antique rules were still known, and the antique taste had not then departed. Many, too, have the splendid Alexandrinum pavement and sumptuous ambos; but it is difficult to say exactly what is owing to the lighting, what to the lovely materials and the art displayed in them, and what to the shape of the plan. San Miniato, for example, has a sunset glow in the choir from the pavonazzetto shutters. Few of the Italian churches have the choir boxed in, like a casket in a packing-case, but leave their altars open or surrounded by an open screen. At Florence, the cathedral has only a low enclosure round the altar; the open circular colonnade round the altar of the cathedral at Verona is very effective—by San Gallo, I think. The boxing up the choir, at any rate in front, utterly spoils the view in many Western cathedrals, and does to a great extent at Milan.

The interior of the church of Belem, at Lisbon, as seen from the gallery at the west end, has an impressive an solemn effect.

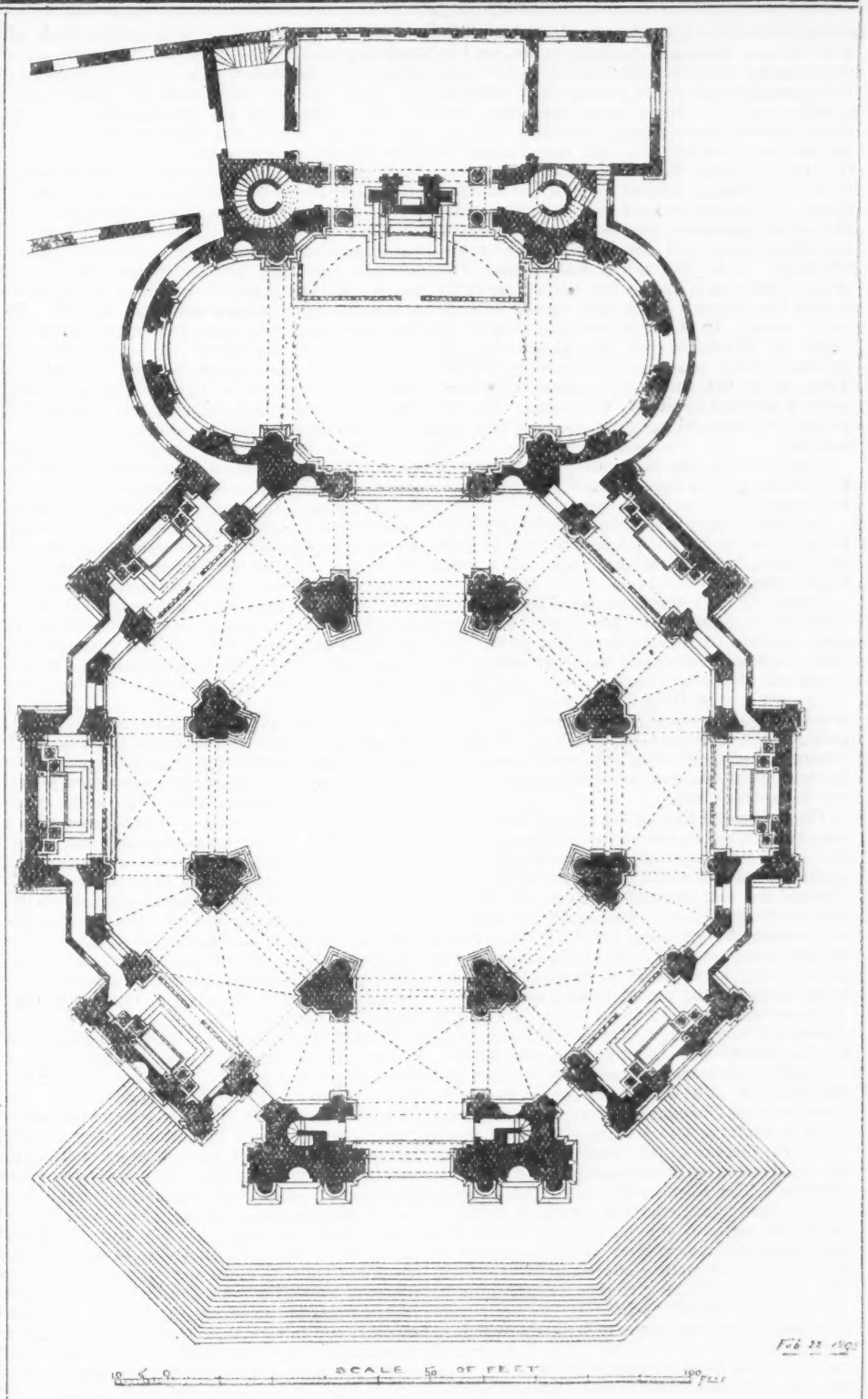
There are three very striking interiors of modern churches at Venice; two by Palladio, Il Redentore and Saint Giorgio Maggiore, both cruciform in

plan; in the first the arms of the cross are formed by two apses, with a third apse of columns behind the altar. The two apses forming the transept start from the lines of the nave, the dome being over the centre of the triconque. In San Giorgio, besides the interruption of the comparatively dark vault by the light from the dome, there are at the back of the altar, two columns of a lower order; this order forms the impost of the nave arches, and these columns help to support the organ. At the sides and over the top of the organ, and through the columns, glimpses of the choir are seen. By this device the whole length of the church, some 275 ft., is indicated, if not absolutely seen.

Santa Maria della Salute at Venice, by Baldassare Longhena, the architect of the Pesaro Palace, is very artistically planned; the body of the church is an octagon, with a recessed chapel in six of the eight sides. One of the remaining two sides contains the door, and the other an opening opposite the altar. The great dome is carried on an inner octagon which forms the nave. Between the aisle and the high altar a long oval chamber is interpolated, well lit at each end, and with the secondary dome over it. Thus the beholder, in looking from the nave to the altar, looks from light across the darkish aisle through the light oval into the comparative darkness seen beyond the altar.

As a rule, a touch of mystery is wanted to give the highest value to human work, for without it the work claims to be perfect and challenges criticism. However perfect a work may be, it is not so perfect that the imagination cannot suggest something different and usually better, while mystery leads the mind to try and fathom it, instead of trying to depreciate the work; you enlist the imagination in your own favour instead of forcing it to fight against you. This is partly the reason why sketches of pictures or sculpture are preferred by artists to finished works; the looker-on seizes on the idea, and not only wonders how the work will be completed, but can complete it in his own imagination, and according to his own taste and fancy.

Important buildings among the ancients mostly had an enclosure round them, called by the Greeks *περιβολος*, which secured important artistic advantages, for it not only confined the view to a proper distance from the main building, but the buildings forming the enclosure were usually lower and less ornate than the main one, and thus acted as a foil to it. Remains of this enclosure are to be seen at the ruins of the baths of Titus and of Caracalla, while at those of Diocletian the great theatre, for seeing the running matches, alone remains, 483 ft. 6 in. in diameter, which is now the Piazza dei Termini. Sir John Vanbrugh understood the advantage of this enclosure, and to the fronts of those two palaces he built, Castle Howard and Blenheim, he made what may be called artificial courtyards, so that the effect he had produced might first be seen at the proper distance. [See lithographed plans in this issue.] In spite of the coarseness of his work, his inclination to proportions that are not happy, and to forms that are both original and ugly, he was a perfect master of scenic effects, and his plans are admirable. The plan of Blenheim may be roughly described as follows:—The main building is an oblong, about 350 ft. long and a little more than 100 ft. deep, and at either end it is finished by a narrow apse, the flanks extend in the same line beyond the apses some eighty odd feet. In the centre of the front a square mass of about 64 ft. projects, consisting of steps, a portico, and a piece of the grand entrance-hall. The front, including the portico, is about 132 ft. long, and after a small break a quadrant is formed on each side, enclosing the main front like a frame; a similar feature exists in Mansart's palace for Gaston d'Orléans at Blois. Another break at each end of the quadrants brings them back to the wings, some 40 ft. wide, which project some 87 ft. from the walls at the sides of the portico. The front is higher, by the entablature and balustrade, than the walls at the back of the quadrants, and the top of the colonnaded quadrants are about level with the sill of the first floor windows of the front. The ends of the wings are wholly rusticated, and are higher by the entablature than the parts behind, and have above them open arcaded structures with finials on their tops. Behind and over the pediment of the portico, is another pediment, the ends of which project so as to make a deep shadow on one side The plan, as far as its accommodation is concerned, is thus arranged:—A vast entrance-hall, about 58 ft. by 43 ft., leads to the corridor, about 10 ft. wide, surrounding the main rooms, and



Plan of Santa Maria della Salute, Venice.

beyond that is the saloon, 44 ft. long by 35 ft. wide, with ante-chambers on either side, leading into the saloon at one end and drawing-rooms at the other, which last lead into State bedrooms, with a state cabinet beyond on the left hand, and into the gallery on the right. The right wing is wholly occupied by the great gallery, 181 ft. long and 21 ft. wide in its narrowest part and widened out at the centre and ends; the middle is 31 ft. wide exclusive of the apse. The left wing contains a vestibule, bedrooms, ante-rooms, wardrobes, &c. The corridor runs right round, forming a passage, except when interrupted by dressing-rooms and wardrobes, &c., and returns into the grand hall, thus leaving two interior courts about 32 ft. by 42 ft., with private rooms beyond the courts. Beyond these and on each side of the entrance-hall, are two narrow double flights of stairs. On either side of the grand courtyard, which was designed to have a portico all round it, are the stable and kitchen courts. There are six back staircases, and some small rooms as well. The main building is exceedingly massive; the clerk of the works said "here all the 9-in. walls are 4 ft. thick." One cannot give too much praise to so excellent and well-organised a plan, and I may say that all the state-rooms are *en suite*. The saloon was probably the state dining-room, and we think that if the dishes had to be brought from the kitchen court, they would not have been very hot when served. The interruption of the corridors by small rooms is not to our ideas happy, more particularly as it would turn the great gallery into a passage, but one has to consider that the great Duke had passed much of his life abroad, where passing through rooms to get to the main one is rather aimed at than avoided; and we do not even know the customs of England when the great Duke was in all his glory. The plan of Castle Howard, which was the first built, is based on the same motive as Blenheim, though treated differently; here the quadrants are the same in plan as those at Blenheim, though smaller, but instead of being colonnades they are rusticated arcades, and there is a dome over the entrance-hall. The wings extend in front of the main structure about 132 ft., instead of about 86 ft. as Blenheim. The garden front is very superior, architecturally, to that of Blenheim, and of nearly the same length, being 300 ft. long, while that of Blenheim is 323 ft. As regards the internal arrangements, the hall is nearly square, with a corridor in front of it, about 7 ft. wide, and is between twin staircases on either side, with a room on each side beyond them; beyond the staircases, towards the

garden front, there is another corridor about 8 ft. wide between them and the state apartment, but there are no internal courts. The state apartments, consisting of twelve rooms, which, with the corridor, form a single line; the wings are detached from the main body, and only connected by the front corrdor; the right one, looking at the front, contains the chapel and some other rooms, and that on the left contains the hunting-rooms. There are two staircases to the corridor of the state apartment, two to the wings to reach the upper floors, and one back staircase to the left wing. A kitchen and a stable court were originally designed, but to the best of my recollection the kitchen court was turned into the stable court. It is not so compact a plan on paper as Blenheim, but the absence of the enclosed courts must make it more healthful. There is in the park a most charming square summer pavilion by Sir W. Chambers, with projecting porticoes and pediments on each face and a dome.

As in both the cases mentioned, the state rooms are on the ground floor; grand staircases were not wanted.

Had Inigo Jones been able to finish Greenwich Hospital as he intended, the effect would have been grand, but now the vista only leads up to a mean house.

I may say here that a really noble staircase is rarely to be found in any palace or mansion, the space required for it being mostly too great. The most magnificent staircase I have ever seen is the Scalinata, at Rome, leading from the Piazza d'Espagna to the Holy Trinity on the Hill; by whom designed I know not. The external staircase in the courtyard of the Ducal Palace at Venice, called the "Giant's Staircase," looks well in the sunlight when you are under the vault of the Porta della Carta.

The staircase of Francis I.'s wing at Blois is very fine, but it is rather a small building than a staircase in the sense in which I am now speaking, and spiral staircases preclude much view of the stairs. Perhaps the best internal staircase for effect is that of Michelangelo at the Laurentian Library, at Florence, though, for the place, it has a touch of folly about it; one can hardly imagine the library being so crowded as to want casements at the sides for the crowd coming out; that at Ashburnham House, by Inigo Jones, is, I think, the finest I have seen in England; as, after passing through low and ordinary rooms, you come on to this fine staircase, architecturally arranged and artistically lit. The double staircase in the centre of the cross at Chambord is very fine, and I was lucky enough to see it when the intermediate floors of the cross had been removed, but it merely shows as an architectural feature holding a staircase. The Royal staircase to the Vatican, built by Bernini, is perhaps the one with the finest effect, although the architectural features are dull and coarse, but it is very artistically managed in the triangle between the Vatican and Saint Peter's, the narrowing width giving a greater idea of distance than actually exists. It has been truly said that in looking down it, it is shortened in appearance by this device, but then it is seen a hundred times oftener from the bottom than from the top. There are many staircases interesting from their peculiar treatment, but mostly they are either too small, or have some defect that takes away from their magnificence; there is a good one, but not grand enough for the place, at Buckingham Palace, a part of which leads to the Picture Gallery. There is a very striking one at Rome in a palace close to the Piazza Navona which is vaulted over the stairs from Ionic columns, and there is a well-designed one at the Comédie Française, especially when looked at from the landing to the crush-room. The finest composition I ever saw where staircases are concerned was that of Wilkin's twin staircases at the National Gallery, when the R.A. was there as well; a wall between the two staircases separated the entrances, on the top of which was a screen of Corinthian columns; standing at the top of one staircase you saw, through the screen, the people coming up and going down the opposite staircase. There is one I have forgotten to mention; it was not a success, but it might have been; it was by Sir William Chambers, at Somerset House, on the right flank entering. It is a common hanging staircase round a semicircle, with iron balusters and a thin mahogany hand-rail; but even with these drawbacks it would have been a success if it could have been carried up continuously, but from the great number of the steps it was necessary to have a landing in the middle, and this level break on each story utterly spoils it.

I do not recollect ever seeing a very effective hanging staircase; there is a certain look of insecurity about such staircases, and not mass enough to give them dignity; except, of course, when you look up them from the landing and cannot see that they are only hanging. Where space is an object, and distance as well, it is very difficult to get a truly magnificent effect. The grand internal staircase in the Ducal Palace at Venice is spoiled by this want of distance, for it turns at right-angles, so that you only see one flight, except at the top. Even twenty-one steps is a great number to go up without a landing, and in a vista this is not much. There is a fine design for a Royal staircase in Sir John Soane's published designs. To attain grandeur you want your flights from the first landing to go out at right-angles on both sides, so that, standing on the first landing, you see the next flight to the right and left; but even then it not only leads you away from the point of entry, but does not make a whole.

In some of Piranesi's imaginative etchings, called, I think, Roman restorations, there are staircases with endless steps, leading, as it were, into infinity. There are great difficulties to be encountered when grandeur is sought in staircases. I have thought that if there were a few steps to the right and left of the first landing, as an indication of continuity; the flights might return separated from the cage by a colonnade; the objection to this is that you do not get a glimpse of the main cage until you are nearly at the top, unless, indeed, you have pedestals of unequal height with balustrades between; but the lower pedestals are apt to be too long. In the palace I mentioned near the Piazza Navona, level arches are got by making some of the columns much shorter than others—not a very happy device where the orders are used, but even this is preferable to arches stilted on one side or on the ramp. In the case of staircases, as well as in most others, variety and a certain mystery greatly add to the interest and charm; for instance, if you can look through double colonnades comparatively dark into brightness beyond. Lord Leconfield in his town mansion has a fine staircase by the late Anthony Salvin. Four great semi-circular arches stand on columns and piers on the walls of the cage 20 ft. from centre to centre, a level balustraded corridor running right round the cage behind the columns.

Planning presents us, on the one hand, with a dull and prosaic task, and, on the other, with the most imaginative and delightful occupation; but whether our task be the prosaic one or the imaginative—and it is often a mixture of the two—both have this merit in common, they equally absorb the mind; for you might as well try to sum trigonometrical series with a wandering mind as to make a plan. The architect often indulges in De Morgan's mathematical hope that "In a better state we may be able to solve these problems without the intervention of paper." By the prosaic plan I mean the arranging of many rooms of nearly the same size and full of minute requirements for some sordid purpose, and with no other end in view than their due lighting, and where nothing will be sacrificed for an organised form, and there is no desire for a rhythmical outside. The other, when the main object is to evoke some noble emotion or delight, so that while you are planning for internal effect the outside features group themselves in your mind with propriety and elegance. For advice I say study the great plans of antiquity and the best of modern times, and if any of you after all your study and striving have the good fortune to possess genius cultivate a poet, so that your name may be handed down, like that of Rabirius by Martial, even when your works have perished.

THE LONDON COUNTY COUNCIL.

THE last weekly meeting of the present County Council was held on Tuesday, at the County Hall, Spring Gardens, Sir John Hutton, Chairman, presiding.

Schedule of Prices for Jobbing Works.—The following report of the General Purposes Committee was discussed, and the recommendation, after a short discussion, was agreed to:

"The Council on June 19 last resolved that, for the purposes of works coming within the category of jobbing works, a schedule of prices should be agreed upon between the Works Department and the architect and engineer, upon which the estimates, measurements, and certificates of the architect and engineer should be based, and that the schedule should be revised accordingly. A schedule of prices with regard to jobbing works in connexion with buildings has now been prepared by the manager and the architect, and we have had under consideration the question at what rate per cent. above the schedule of prices the jobbing works should be carried out by the Works Department. To aid us in the matter we have referred to the published list of the percentages at which the jobbing contracts under the School Board for London are let. These percentages differ considerably. One contract is 17½ per cent. above the schedule prices, and four contracts have been let at the schedule prices. As these minimum and maximum percentages are doubtless due to exceptional circumstances, we think they should not be taken into consideration in settling the Council's schedule. The average of the remaining forty-four contracts under the School Board works out to just over 11 per cent. It must, however, be remembered that for the purposes of these jobbing contracts, the Board Schools have been placed in forty-nine groups, whereas the Council's jobbing works carried out by the Works Department extend over the whole of London. We therefore think that the percentage above the schedule prices for the Council's jobbing works should be slightly higher than the average of the School Board contracts, and that 12½ would be a reasonable percentage. We accordingly recommend—

'That 12½ per cent. be allowed above the schedule of prices for jobbing works in connexion with buildings carried out by the Works Department.'

The schedule of prices for engineering works is not yet ready, but we will report later on with regard to it."

Cost of Works executed by the Works Department.—The same Committee also brought up the following report, each of the recommendations being agreed to after various amendments had been negatived:—

"The Council on November 23 last referred it to us to consider and report as to the advisableness of framing a Standing Order which would provide for the approval of the Council being obtained to the ascertained cost of works executed by the Works Committee. This reference was made on the recommendation of the Works Committee, as it had been brought to their notice that the present Standing Order merely required the Committee to report to the Council the cost of each completed work, and did not provide any means whereby the approval of the Council might be expressed to the ascertained expenditure. The present Standing Order on the subject is as follows—'The Committee shall, on the completion of the works referred to it, forthwith report to the Council that such works are completed, with particulars of the estimated and actual cost thereof.' Having carefully considered the matter, we are of opinion that there should be some amendment of the Standing Order to effect the object in view, we recommend—

'That the following be substituted for the Standing Order quoted above—

1. The Committee shall keep separate accounts in such a manner as to show the cost of each work executed.

2. The actual cost and final estimate shall as far as practicable be ascertained and certified within three months after the completion of the work.

3. Statements showing the estimated and actual cost of the works executed shall be prepared half-yearly, in April and October, and presented to the Council.

4. When there has been an original estimate of cost, such statements shall show (*a*) the amount of the estimate, (*b*) the amount of the estimate as amended (if at all) by reason of certified additions or deductions, and (*c*) the amount of the certified actual cost of each work executed.

5. In the case of jobbing works, which for this purpose are defined to be works in respect of which bills of quantities, complete specifications, and drawings have not been supplied, the statements shall show the total of (*a*) the amounts shown by the measured accounts as priced out in accordance with the schedule of prices, and (*b*) the certified actual cost.

6. Such statements shall be presented by the Works Committee to the Council in the months of April and October in each year in respect of all works which have been certified as complete, and the final estimate and certified actual cost of which has been ascertained during the preceding half-year.

7. In the case of any work, the actual cost of which has exceeded the original estimate or the amended estimate, as the case may be, the Works Committee shall obtain the approval of the Council to the amount of the excess.

8. The actual cost of each work as ascertained and reported shall be charged as expenditure in the books of the Council to the account of the service in connexion with which the work was executed, but a separate account shall be kept, to be called the "Works Department Profit and Loss Account." This account shall be debited from time to time with sums equal to the amounts by which the actual cost of works exceeds the original estimate or amended estimate, or amount of the measured account, as the case may be, and shall be credited with sums equal to the amounts by which the actual cost of works is less than the original estimate or amended estimate or amount of the measured account, as the case may be.

9. A statement showing the balance appearing on such account shall be presented to the Council with each half-yearly statement of cost of works.'"

The Old and the New Building Acts.—On the reception of the report of the Public Health and Housing Committee,

Major Probyn asked whether it was intended to build artizans' dwellings on the Drury-lane sites under the old Building Act or the new one.

Mr. Bruce replied that, since the buildings were designed and the foundations put in last year,

before the new Building Act came into force, the work would be carried out under the old Act.

Tribunal of Appeal and the New Building Act.—The Building Act Committee brought up a report containing the following paragraph, the recommendations being agreed to.

"Section 180 of the London Building Act authorises the Tribunal of Appeal to 'appoint such clerks, officers, and servants as they may find necessary, who shall be paid such salaries as shall be determined by the Council, and to provide offices and to obtain such professional advice and assistance as they may find necessary'; and Section 186, after providing that all fees, &c., paid to the tribunal shall be paid over to the Council, states that 'the office and establishment expenses of the tribunal, and expenses incurred by the tribunal and the Council in reference thereto, shall be defrayed out of the county fund.' We have, under these sections, made certain provisional arrangements with the tribunal, subject of course to the Council's approval; and we recommend—

'(*a*) That the Council do approve of the payment of a salary of 250*l.* a year to the person appointed as clerk of the Tribunal of Appeal.

'(*b*) That the Council do approve of the Tribunal of Appeal arranging for office accommodation at the Surveyors' Institute at the rent of 65*l.* per annum, and paying a sum of 5*s.* a week for cleaning the offices.'"

Purchase of the Water Companies. — The Finance Committee reported recommending—"That the Parliamentary Committee be instructed to take the necessary steps to obtain Parliamentary authority for the period of 100 years being allowed for repayment of the moneys borrowed for the purchase of the water companies' undertakings."

Mr. Beachcroft moved to add the words, "and for providing a supplemental supply."

Mr. H. P. Harris seconded the amendment, but it was negatived, and the recommendation was agreed to.

Before the adjournment of the Council votes of thanks were passed to the Chairman (Sir John Hutton), the Deputy-Chairman (Mr. C. Harrison), the Vice-Chairman (Mr. Dickinson), and the staff of the Council.

The first meeting of the new Council to be elected to-day (Saturday) will be held on the 12th inst.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS:

ANNUAL DINNER.

THE annual dinner of this Institution took place at the King's Hall, Holborn Restaurant, on the 23rd ult., when Mr. H. H. Bartlett, of the firm of Perry & Co., took the chair, supported, among others, by Mr. H. Hardwicke Langston, Mr. P. B. Strudwick, and Messrs. H. Eyres, Howard Colls, Maton, Joseph Randall, and T. Stirling, jun., the company numbering 362.

The toast of "The Queen, the Prince of Wales, and the Royal Family," having been disposed of, Mr. Joseph Randall briefly proposed the toast of "The Architects, Surveyors, and Engineers," coupled with the names of Mr. H. Hardwicke Langston, who replied for the architects, and Mr. P. B. Strudwick, who responded for the surveyors.

Mr. H. Eyres next gave the toast of "The Builders," coupled with the name of Mr. Howard Colls.

Mr. Howard Colls, in the course of his reply, said that the proper duty of both the clerk of works and the builder's foreman was to see that work was faithfully and properly carried out. It was also the duty of the foreman to see that the master's interests were served, and to see that the men employed did a fair day's work for a fair day's pay. He would not employ a foreman if he thought that his anxiety was to sweat the men; but what was wanted now, and what they asked for, was an intelligent day's work. The Gospel of Idleness was too often preached in these days. It was said that if a man only did half-a-day's work, there was thus work for another man for the rest of the day; but the greatness of England was not brought about in that way. No one could succeed who did not work fairly and do a proper day's work. If work cost more in consequence of the present-day teaching, so much less work was done; and while men who acted in the spirit of this teaching believed they were helping their fellow-men, he thought they were doing the exact opposite.

Mr. J. Beer proposed the toast of "The Governors, Trustees, Donors, Honorary Subscribers, and Visitors," coupled with the name of Mr. T. Stirling, jun., who briefly replied.

The Chairman, in proposing the toast of the evening, "The Provident Institution of Builders' Foremen, and Clerks of Works," said that he was speaking on behalf of an old-established institution, which existed for one object—to help those of its members who were in need. The Institution dealt in no niggardly way with pensioners, for it awarded 12*s.* a week to its members, and 5*s.* a week to widows of members; the children of members being assisted up to the age of fourteen. Every case was thoroughly inquired into, and help was not afforded unless the case was a deserving one. A sum of about 5,000*l.* had been accumulated during the existence of the Institution, but the members wished to keep that sum intact, desiring to pay each year's outgoing by each year's income. The expenditure each year was balanced by income, and the reserve was not touched. The expenses of carrying on the Institution were very small. Omitting printing, rent, postage, and stationery, which were items which did not come into the management of the Institution, the working expenses were no more than 46*l.* 6*s.* in the year. He might mention that there was a library connected with the Institution, consisting of 450 volumes. The library could be enlarged, and if any one had suitable books to spare the Institution would be glad to receive them. No society or non-society regulations were allowed to interfere with the administration of the charity; and wisely so, in his opinion. He might add that human beings could not be forced into one mould. Nature was against it. How could they expect, or force human beings to think in the same way? The only way they could help themselves was for each man to make his own abilities felt and his own energies of value to the world. Those abilities it was a man's duty to use, and endeavour to raise himself to the position of the highest; not sink down to the level of the lowest.

The toast was coupled with the name of Mr. J. W. H. Bedford, who supplemented his remarks by reading the list of subscriptions received during the evening, amounting to 62*l.* 9*s.* 6*d.*, including 10*l.* 10*s.* from the Chairman.

Other toasts were "The Chairman," proposed by Mr. W. H. Sharpington, "The Press," proposed by the chairman and responded to by our representative, and "The officers of the Institution," proposed by Mr. Sharpington, who feelingly referred to the death of Mr. G. Groome, which had occurred since the last dinner.

COMPETITIONS.

INFECTIOUS DISEASES HOSPITAL, CREWE.—We understand that the premiums in this competition have been awarded as follows:—First premium, Mr. Geo. Bolshaw, Southport; second premium, Mr. E. Harding Payne, London. Sixty-three sets of designs were received.

ARCHITECTURAL SOCIETIES.

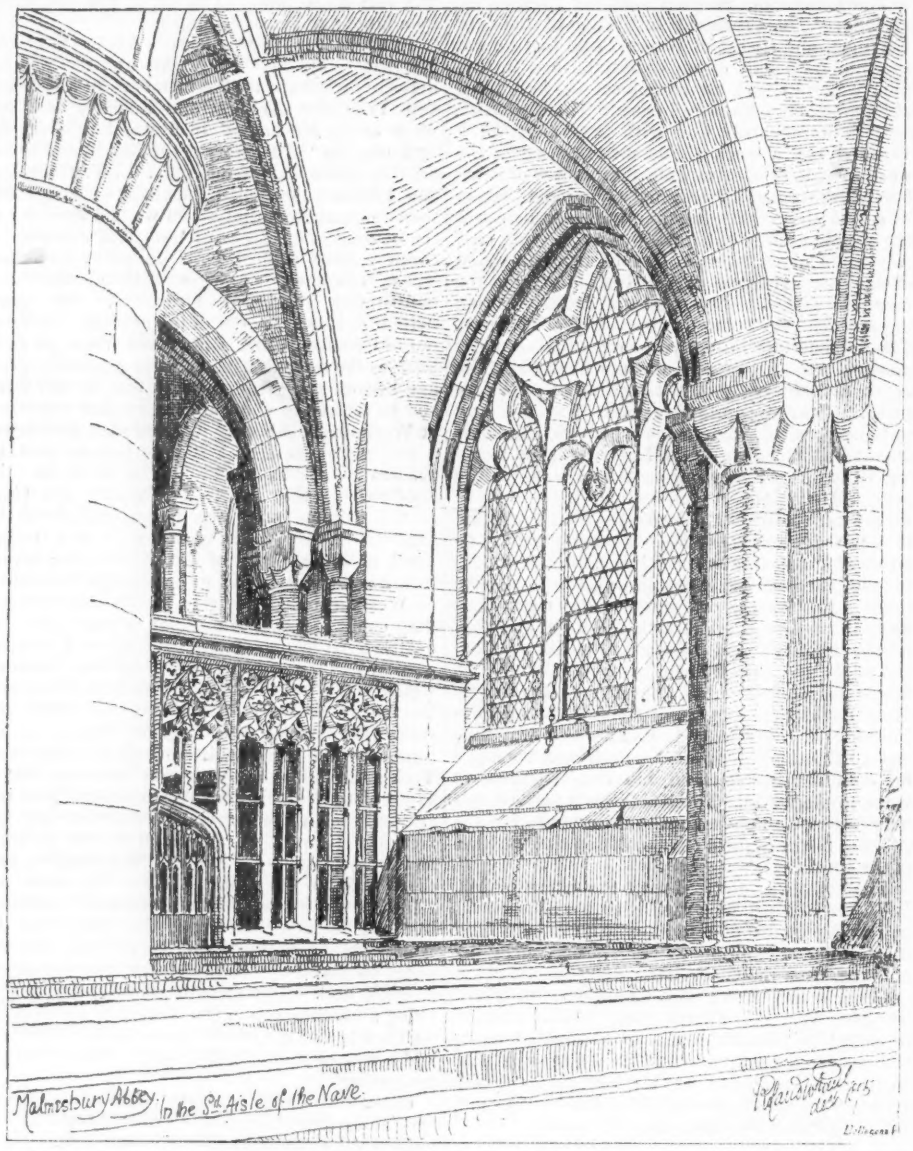
CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING SOCIETY.—At a meeting of this Society on the 21st ult. Mr. W. Pogson read a paper on "Iron Roofs." After observing that iron, on account of its great durability, comparatively easy manipulation, and great strength in comparison with other materials, relative weights being considered, was preferable to other materials such as stone, brick, timber, &c., for spans of more than about 30 ft., he gave a description of the various forms of iron roofs in use. The form of roof consisting merely of corrugated iron bent round angle-irons and bolted thereto was first dealt with, after which the lecturer proceeded to sketch the construction of those covering spaces of greater width and supporting heavier coverings, finishing up with a description of some local roofs which might be classed among the best examples of modern engineering skill. The dead and live loads were also fully dealt with, the lecturer expressing the opinion that in Great Britain an allowance of from 40 lbs. to 50 lbs. live load per square foot for wind-pressure was amply sufficient, quoting various recorded pressures in support of his views. It was also pointed out that where the roofs were built in a series of separate principals the intermediate trusses would not need anything like such a large allowance for wind-pressure, on account of the protection afforded by the outside trusses. There was no necessity, he contended, to treat snow and wind together as live load, inasmuch as a high wind exerting a pressure of 50 lbs. per square foot would effectually clear the snow away in a very short time. The paper was illustrated by a large number of diagrams.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. J. T. Micklethwaite, F.S.A., delivered a lecture to the members of the Leeds and Yorkshire Architectural Society, in their room at the Mechanics' Institute, Leeds, on the 25th ult., on "The Story of the Building of Westminster Abbey Church." Mr. E. T. Dodgshun (the President) occupied the chair. Mr. Micklethwaite remarked that when we had the story of the development of one of our great churches, it threw a good deal of light on other churches. These churches, as we saw them, were not deliberately designed structures, but grew naturally, like a tree out of the ground. Some of our older abbeys, like Ripon and York, go right back to the seventh century, and gradually grew and became the great churches that we saw now, and he wished to show them how that happened at Westminster Abbey. Westminster Abbey was a national monument. It only became that by accident. It happened to be next to the residence of the King, and became the place of the coronation of the Kings, and from the time of Henry III. onwards it was recognised as their place of burial. In the seventeenth century it began to be thought that burial in Westminster Abbey was the greatest honour that could be conferred upon a man after his death. That feeling grew up during the Commonwealth, and all the great men of the Commonwealth were buried there. The first Abbey was erected in the seventh century, but Bede, the great historian of the English Church at the time, did not mention it, though he mentioned York and Ripon, and we might take his silence as proof that in his time Westminster Abbey did not exist. In the eleventh century we get the fact that Edward the Confessor wished to build an Abbey close to his house at Westminster, and there was an old Abbey there. We were not told how old it was, but he set to work to rebuild it. The lecturer then traced the progress of the Abbey buildings, illustrating his remarks by references to plans, and showing how they continued to grow until the sixteenth century, every step being a definite step in the history of the Abbey. At the close of the lecture questions were invited, and a vote of thanks to the lecturer concluded the proceedings.

GLASGOW INSTITUTE OF ARCHITECTS.—A special meeting of the Council of this Institute was held in the chambers of Messrs MacLean, Fyfe & MacLean, on the 25th ult., the President, Mr. T. L. Watson, in the chair. The Secretary, Mr. C. J. MacLean, read the letters which he had received from the Very Rev. Principal Caird, Sir John Stirling Maxwell, Bart., Sir George Reid, P.R.S.A., Sir Frederic Leighton, P.R.A., and Mr. R. Norman Shaw, R.A., intimating their acceptance and appreciation of the honorary membership which had been conferred on them by the Institute.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—At a meeting of this Institution, recently held at the Westminster Palace Hotel, Victoria-street, the Chairman, Mr. Henry J. Young, presiding, a paper was read by Mr. Walter J. Fryer, A.I.E.E., on "The Practical Application of Alternating Current Motors." The difficulties of running alternate motors from lighting circuits, especially in England where single-phase currents at high frequency are used, were first indicated, and it was argued that they could be successfully overcome. Describing the several classes of these motors, the author showed that a single-phase motor was one which was energised by simple alternating currents; a two-phase motor, one actuated by two currents differing in phase and traversing the field in two distinct courses. In a three-phase motor the angular effect of the currents usually differed by either 120 deg. or 60 deg., according to the method of winding. Rotary-field multiphase motors consisted of many poles, the windings of which were so arranged that the resultant magnetic force passed successively through each, causing the poles to travel in a rotary manner. A single-phase Brown motor with the method of winding was then fully described, as was also its application to an installation designed by the author, the supply for which had been taken from the public lighting circuits. The various arrangements for rendering the motor self-starting on load, and for preventing the sudden rush of current, which would cause the pressure at the lamp terminals to drop were illustrated by numerous diagrams.



Illustrations.

MALMESBURY ABBEY.*

THE abbey at Malmesbury, in the extreme north of Wiltshire, formed one of the group of great Benedictine houses in the West, to which Gloucester and Worcester, Pershore and Tewkesbury belonged. Gloucester and Worcester, now cathedral establishments, have already been described in our Cathedral series.† Tewkesbury has also been given in the present series.‡ With the exception of Pershore Abbey, all these churches are fairly complete. Both Pershore and Malmesbury, however, have fared badly. At the former, everything west of the crossing has gone; while at Malmesbury, the nave is the only portion of the church remaining in anything like a complete state.

Maeldulph is said to have built a cell at Malmesbury, and afterwards a "basilica."

Aldhelm, a disciple of Maeldulph, in the seventh century, generally considered as the founder of the monastery of Malmesbury, appears to have enlarged the basilica of Maeldulph, and dedicated it to the Holy Saviour and SS. Peter and Paul. There seem also to have been two other smaller churches, one dedicated to St. Mary and another to St. Michael.

The space at our disposal will not permit a detailed account of the period extending between this and the Norman period, when the abbey church was rebuilt on a grander scale. Aldhelm was transferred to Sherborne, but on his death and canonisation was brought back and buried at Malmesbury Abbey. The monastery received from time to time benefactions and grants of land from the Kings of the West Saxons and of Mercia. King Athelstan not only gave grants of land, but also presented the abbey with many relics, including the hilt of the sword of Constantine the Great, in which was said to be one of the nails from the Cross. Athelstan dying in 941, was buried before the altar of the abbey, and his two nephews are said also to have been buried by St. Aldhelm in the chapel of St. Michael.

There can be but little doubt that the Norman church occupies the same site as the earlier churches, though its walls would not necessarily coincide with the earlier buildings. The design of the present church is sometimes attributed to Bishop Roger of Salisbury (1107-1139), but its architecture would place it rather later in the century, and William of Malmesbury, although alive at the time, makes no mention of it.* From the scanty remains of the presbytery we may conclude that the entire church was rebuilt at this period, and it must have been, when complete, one of the most imposing buildings of its kind in England. The impressive effect was much enhanced, as in the cases of Tynemouth, Whitby, and Durham, by its position—in this case an elevated plateau, with sides sloping steeply to the Avon. The monastery was so arranged that the monastic buildings, which were on the north side of the church, came almost to the edge of the plateau. The chief approach was from the south, and on this side the town was built; and in the south-west corner of the churchyard was the Church of St. Paul, now, with the exception of the tower and spire, used as a belfry for the abbey, completely destroyed.

The ground plan of the church was an interesting one, although in its main features it no doubt followed the usual Benedictine arrangement. It consisted of a nave of nine bays with aisles and a large south porch, a central tower crowned with a lofty spire, transepts projecting two bays clear of the nave aisles, and a presbytery and chapel of St. Mary. William of Worcester describes the length of this chapel of St. Mary as thirty-six "gressus," and its breadth nine "gressus." He also gives the projection of the transepts beyond the aisle as twenty-two "gressus." The west wall of the south transept being fairly complete to its south-west angle, we are enabled to pretty accurately determine the other main dimensions of the church. The *interior* face of this south transept is 39 ft. beyond the aisle. Applying this to the other dimensions given by William of Worcester, would give the total length of the church as about 305 ft., and the length and breadth of the chapel of St. Mary "at the east," as 64 ft. and 16 ft. respectively. It has been suggested that this eastern chapel was placed *across* the east end as at Abbey Dore, Byland, and Durham, but it seems most probable that, like Tewkesbury, and Gloucester, and St. Alban's, it projected eastward of the presbytery. The chapel was, from its dimensions, evidently four bays in length.

The interior length of the nave is 150 ft., and the tower was about 40 ft. square, leaving about 110 ft. for the length of the presbytery east of the crossing. The distance from centre to centre of the nave columns is 16 ft., and presuming that the bays of the presbytery were of the same width, would give seven bays, that is a presbytery of six bays with an eastern ambulatory or aisle. Although the late Professor Freeman, in an article on the architecture of the abbey, thought it probable that the presbytery was a short Norman one of three or four bays, it would seem, taking the dimensions above quoted, that it was of greater length, and the importance of the abbey, and the number of tombs and shrines which it contained, would not make this length excessive or unusual.

One of the bays at the east end might well be taken up by the shrine of St. Aldhelm, which would thus have five bays for the presbytery between the crossing and the altar-screen.

The ritual choir, as may be seen by the inner faces of the tower piers, was under the crossing, and perhaps projected one bay into the nave, where it was screened off from the rest of the nave by the rood-screen.

This rood-screen remains, but is now placed between the piers under the western arch of the crossing, and forms the reredos behind the present parish altar. It has a central door, and is finished with an embattled cornice and paterae. The plinth is almost entirely covered by the modern steps of the altar, but there are no traces of any altars flanking the doorway, although there may very possibly have been originally one on each side. The screen is of the fifteenth century. The transepts were of two bays beyond the aisles. They had no western aisles, but probably eastern chapels. The central tower was perhaps a lantern—afterwards closed by the insertion of Perpendicular vaulting—and was crowned with a lofty "pyramis," or spire, that is said to have rivalled that of Salisbury Cathedral in height.

Another feature of the building when complete was a large square tower at the west end, not projecting beyond the Norman front, but rising over the two western bays of the nave. Malmesbury was thus similar to Hereford when complete in having western and central towers.* The ruin of much of the fabric is to be attributed to the fall of these towers. The central tower seems to have been in a dangerous condition for some period, and in falling doubtless ruined the presbytery. Likewise the western tower carried away the western bays of the nave on which it was built, and from the utter ruin of the north side of the church at this point, would seem in its fall to have inclined in that direction. These calamities must be taken into consideration in dealing with the state of the building at the time of the dissolution of the monasteries. It is by no means improbable that the western tower had been built to contain the bells when the central tower gave signs of falling, and that on the destruction of the presbytery the services were held in the nave. This perhaps would explain William of Worcester's reference, on his visit *temp.* Henry VI., to "the ruins of a rare demolish'd Church," and to "her Great High Tower, at the upper end of the High Altar much decay'd and ruinated." Leland also says, "It had two steeples. One had a mighty high pyramis, and fell dangerously *hominum memoria*; it stood in the middle of the transeptum of the church, and was a mark to all the country round. The other yet standeth, a great square tower at the west end of the church." This was in 1540.

At the Dissolution, the abbey buildings were purchased from the king by William Stumpe, Esq., for fifteen hundred pounds. Stumpe presented the church to the town of Malmesbury as a parish church, and doubtless some of the enclosing walls are of this date. More recent

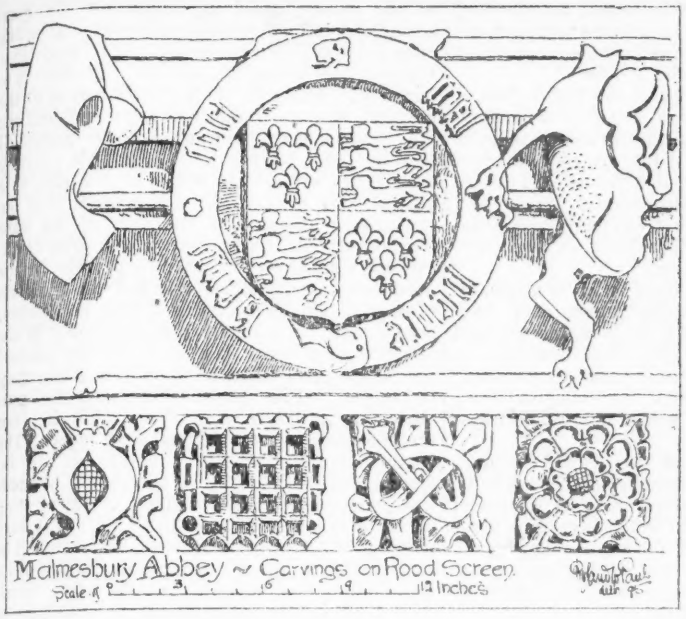
* The series of the "Abbeys of Great Britain" is continued this month with illustrations of "Malmesbury." Particulars of this and of the three Cathedral series ("England and Wales," "Scotland," and "Ireland") will be found on p. xx.; also (on page i.) of the recent re-issue, in book form, of the series of English and Welsh Cathedrals.

† See *Builder* for December 5, 1891, and August 6, 1892.

‡ See *Builder* for December 1, 1894.

* Bird's "History of Malmesbury," p. 67.

* Other examples are at Ely and Wimborne; at Christ Church, Hants, only the west tower remains.



alterations and additions were carried out in 1822. The portion now used consists of the first six bays of the nave west of the crossing. A gallery crosses the west bay, and the seventh bay of the south aisle has been enclosed, and forms an inner lobby to the south porch.

As will be seen on referring to the ground plan, the whole of the main walls are Norman—everything, in fact, to the clearstory level, with the exception of some minor details, windows, &c.

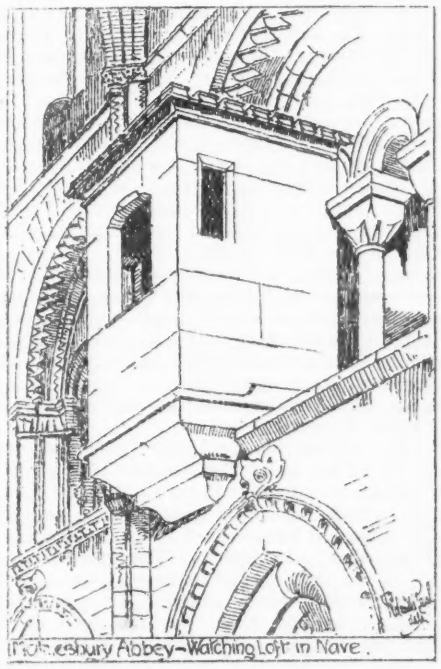
The western front had a central doorway with sculptures of the signs of the Zodiac, and the whole front was arcaded, divided into four stories horizontally. At each angle was a large stair-turret, oblong on plan. There was a large west window, a Perpendicular insertion, however, and over this rose the great west tower. The nave itself of nine bays has an arcade with pointed arches resting on cylindrical columns 5 ft. in diameter. Above is a triforium with an arcade of four arches enclosed in a large semi-circular arch. Over this is a clearstory—Decorated—pierced with windows of three lights, one in each bay, and vaulting springing from wall shafts carried up from the caps of the great columns. The lofty proportions of the triforium and clearstory—for there is evidence on the exterior that the clearstory was not raised when altered in Decorated times—is a special feature in the interior, and is a much more satisfactory design than the arrangement in the naves of Gloucester and Tewkesbury, where these features have been reduced in size on account of the great height given to the nave columns. The aisles were lighted by single round-headed windows, and many of these remain.

The great south porch, with its elaborate sculpture, is alluded to and illustrated elsewhere in the present number. It was intended to be vaulted, but the work does not seem to have been completed.

Nothing seems to have been done—at all events to the nave—in the thirteenth century; but in the fourteenth the desire doubtless for more light induced the monks to rebuild the clearstory, not only of the nave, but to judge by traces in the walls, of the transepts also, and perhaps of the presbytery. We know that at Tewkesbury the presbytery had undergone a like change, and at Gloucester it was practically remodelled in Perpendicular times. In two bays of the south aisle, and in one of the north aisle of the nave, large decorated windows were introduced, of rather curious design (one of these shows in the sketch of the interior). That on the north, owing to the cloister necessitating its being raised, was finished with a gable and vaulted. This forms a curious feature on the exterior, and is similar in treatment to a window in the corresponding position at the Priory Church of Brecon. At Shrewsbury the aisle windows were gabled, and also at Chichester. The picturesque and unusual treatment of the clearstory windows at Tewkesbury was illustrated in our account of the abbey in the *Builder*, December 1, 1894. During this period the great south porch was encased, and buttresses added, and the walls of the porch and of the aisles and clearstory were finished with pierced parapets. The introduction of vaulting also necessitated pinnacles and flying buttresses, which were added on both sides of the nave. Of the central tower, three of the piers remain. The south-east pier has been destroyed. Only the west and north arches are standing, with the springing of the later vaulting above. The north-east pier, on its north and east faces respectively, shows portions of the transept and presbytery, both of which appear to have followed pretty closely the general design of the nave.

The west wall of the south transept remains, including a portion of a large turret at the south-west corner. It was, like the nave, arcaded both inside and outside below the windows.

There are some points of interest that claim attention in the interior. Projecting from the triforium at the fourth bay, west of the crossing on the south side, is a Late Perpendicular

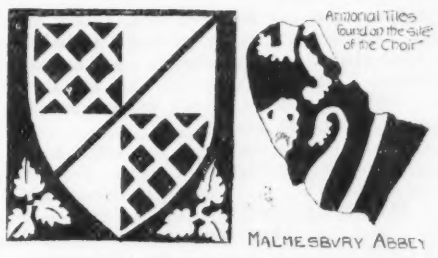


watching-loft, with openings in the front and at the sides. Its exact purpose cannot be determined, but it was most probably placed for watching some shrine or altar near the rood-screen on the north side of the church. The rood-screen itself is of stone, 11 ft. 6 in. in height, and also of Late Perpendicular date. It is of interest to compare with the screen left in a similar position at Croyland Abbey (see *Builder*, September 1, 1894). That at Malmesbury was apparently simply a screen for the choir-stalls to return against, whereas that at Croyland was like St. Cuthbert's screen at St. Albans Abbey, a reredos with an altar in the centre, and a doorway on either side.

The cornice of the Malmesbury rood-screen is ornamented with various paterae — griffins, a portcullis, a Tudor rose, a harp (? for St. Aldhelm), a pomegranate, a knot, and various other badges and devices. In the centre are the arms of King Henry VII., with France quarterly with England, surrounded by a garter, and with supporters, a dragon and a (?) greyhound (the latter much mutilated).

There are two side-screens across the aisles at the first column west of the crossing, with pierced tracery and doorways in the centre. (See sketch of interior.)

Of the numerous monuments this abbey must have contained only one remains — placed at present under the arch south of the present altar—consisting of an effigy, crowned, resting on a late altar-tomb. The sides are panelled, with small buttresses between each panel. The trunk of the effigy and the body of the lion on which the feet rest are original. The heads of both effigy and lion, however, are later additions, and of poor workmanship. Over the head is a rich canopy, and on each side of the pillow an angel. It is generally known as the tomb of King Athelstan.



In the vestry, now north of the altar, are some encaustic tiles, dug up on the site of the church east of the tower. Two are armorial, one bearing the arms of the Despencers, and another with the fragments of two lions, apparently part of a large tile. There are some foliage patterns of good design and some plain border tiles, yellow and black. Here are also two bosses, one with the Five Wounds, another with a representation of the Annunciation.

There are some interesting traces in the third bay from the west on the south side, of the filling up and buttressing, which was rendered necessary by the erection of the western tower. An arch was built within the Norman one, and the column was buttressed on its south side. Above in the clearstory the extra flying buttress is still standing.

Of the monastic buildings immediately attached to the church nothing remains; but the doorway at the north-east angle of the nave, which led to the cloister, is an interesting feature. The original Norman arch has had a later doorway inserted, and Perpendicular vaulting placed in the thickness of the wall. This doorway and vaulting should be compared with the doorway at Tewkesbury. A portion of the springing of the vaulting of the cloister remains in the angle, and shows it to have been of Perpendicular date.

At a little distance north-east of the abbey is an Elizabethan house, standing on an earlier crypt or basement; this is probably the lower portion of the Farmery (or Infirmary) Hall, and was placed quite at the edge of the hill overlooking the Avon.

Nothing remains of the gateway to the abbey precincts. The entrance gateway to the churchyard on the south side near the market cross is a comparatively modern building, probably of the seventeenth century. The market cross itself is a well-known example, resembling Chichester and Salisbury.

R. W. P.

THE SOUTH PORCH.

We give a separate illustration of this, reproduced from an admirable and not very generally attainable engraving by Le Keux.

An anonymous tourist visited Malmesbury in 1634, and in his "Topographical Excursion," printed in "Brayley's Graphic and Historical Illustrator," p. 411, has preserved a minute account of the sculptures of the southern porch.

After a general description of the edifice, he says: "At the South side of this ancient ffabricke at the entrance of a fayre Porch, there is curiously cutt, and carv'd in ffreestone in 3 ovall arches, Statues rep^{s}enting the Creation, the Deluge, & the Nativity, w^{ch} in their artificiall Postures, I may compare to wells, though not in number soe many, nor in lignes so great. And wthin the same Porch on either side are equally plac'd the 12 Apostles, & right over the Doore entring into the Church, is Christ on His Throne between 2 Cherubims, w^{ch} are most artificially cutt, and carv'd.

On the first arch.—1. Defac'd quite. 2. Light from Chaos. 3. The Sea from the Land. 4. The Lord sitts & beholds. 5. Hee makes ffowles. 6. Hee makes ffish. 7. Hee makes the Beasts. 8. The Spirit moving upon ye water. 9. Adam made. 10. Adam sleeps & woman made. 11. Paradice. 12. Adam left there. 13. Divell tempts Eve. 14. They hide themselves. 15. God calls to them. 16. God thrusts them out. 17. A Spade & Distaffe given. 18. Adam digs, Eve spins. 19. Eve brings forth Cain. 20. Abell tills ye Earth. 21, 22. Two Angells for keepers. 23. Abell walks in ye ffeild. 24. Cain meets him. 25. Cain kills Abell. 26, 27, 28. Demolish'd quite.

On the second arch.—1, 2. God sitts and beholds the Sins of the World. 3. Cain a fugitive. 4. He comes to Eve. 5. An Angell. 6. God delivers Noah ye Axe. 7. Noah workes in the Arke. 8. Eight Persons saved. 9. Abraham offers Isaac. 10. The Lamb caught in ye Bush. 11. Moses talkes wth his father. 12. Moses keeping Sheep. 13. Moses and Aron strikes ye Rocke. 14. Moses reads ye Law to ye Elders. 15. Sampson tearing the Lion. 16. Sampson bearing ye City Gates. 17. The Philistins put out his eyes. 18. David rescues the Lamb. 19. David fights wth Goliah. 20. Goliah slaine. 21. An Angell. 22. David rests himself. 23. Defac'd quite. 24. David walks to Betheron. 25. David's entertainm^{t} there. 26, 27. Demolish'd quite.

On the third arch.—1. 2. Defac'd quite. 3. John ye forunner of Christ. 4. Michaell the Archangell. 5. The Angells comes to Mary. 6. Mary in Childbed. 7. The 3 Wisemen comes to Christ. 8. They find him. 9. Joseph Mary & Child goes into Egypt. 10. Christ curses ye ffig-tree. 11. Hee rides on an Asse to Jerusalem. 12. Hee easts the Passover with his twelve Apostles. 13. Hee is nayl'd to the Crosse. 14. Laid in the Tombe by Joseph. 15. Hee riseth againe. 16. Hee ascendeth into Heaven. 17. The Holy Ghost descending on the Apostles. 18. Michaell overthrows ye devil. 19. Mary mourning for Jesus. 20, 21, 22, 23. Demolish'd quite."

These sculptures have been fully dealt with by Professor Cockerell in his work on the sculptures of Wells Cathedral.

Mr. C. H. Talbot, writing in the *Wilts Archæological Magazine*, Vol. XXI., says, "It is evident, at a glance, that these (the sculptures of the twelve Apostles) are earlier than the rich carvings of the great arch of entrance. The fact is that the latter have been cut out of the original plain mouldings of the arch, and in the west doorway of the nave some of the mouldings were so treated and some remained plain. A. N. W.

INTERIOR VIEW.

This view of the portion of the interior of the abbey which is still in use as a church is from a drawing kindly placed at our disposal as an additional illustration, by Mr. A. Needham Wilson, who made the special drawing of the exterior for the serial set of illustrations of Abbeys.

HANOVER CHAPEL, REGENT-STREET.

WE have pleasure in giving a reproduction of the perspective of the front of this church, which gained for its author, Mr. G. J. J. Lacy,* the silver medal for a perspective drawing of a building, in the last Royal Academy Students' competition, and which has what we may call a melancholy interest in another respect, inasmuch as it is a representation of the only thing in Regent-street which can be called architecture, which was the design of an eminent architect, the late Professor Cockerell, and which is probably before long to be demolished.

The first stone of this church was laid on June 6, 1823, and it was completed, at a cost of 16,180*l.*, in June, 1825. A private Bill for its removal was read for the third time on July 30, 1891, it being arranged, we understand, that the site should be purchased by the Commissioners of Woods and Forests. In November last was laid the foundation-stone of the church that is to take its place—St. Anselm's, Davies-street.

The exterior, with its Ionic order, is no doubt, from the point of view of the present day, somewhat Academical, though it is a refined and scholarly design of its type. The interior is in some respects more interesting than the exterior; it is admirably designed for congregational worship, and the glass dome has an excellent effect internally.

That a church such as this should be deliberately pulled down, although another has to be erected in the neighbourhood to take its place, from sheer greed for a site which has a high commercial vulue, is one of the unpleasing signs of the spirit of the day in modern England, where money considerations seem more and more to take precedence of all others.

* Not "Lacey," as given in error on the plate.

PLANS OF BLENHEIM AND CASTLE HOWARD.

THE plans of these well-known mansions, both by Vanbrugh, are given as illustrations to Professor Aitchison's fifth Royal Academy lecture, printed on another page, and are referred to there.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

FEVER HOSPITALS.

THE ordinary meeting of the Royal Institute of British Architects was held on Monday last, at 9, Conduit-street, Mr. F. C. Penrose, M.A. (President), in the chair.

The decease of three members was announced—viz., Mr. Arthur Lett, Fellow; Mr. Thomas Edward Bridgen (Manchester), Fellow; and Mr. Ewan Christian, Fellow and past President. Mr. Christian's funeral had taken place that day, and was attended, on behalf of the Institute, by the President, the ex-President, Mr. Macvicar Anderson, and Mr. James Brooke, Mr. Graham, Mr. Aston Webb, Mr. Ingelow, and others.

The President said the members must have all received with the greatest regret the announcement of the death of their excellent friend and former President, Mr. Ewan Christian. His work was so well known that it was unnecessary to dilate upon it, and he would simply propose that the condolences of the Institute should be sent to Mr. Christian's widow and children. This was unanimously agreed to.

Mr. T. W. Aldwinckle then read a paper on "Fever Hospitals."

Mr. Aldwinckle said that much of what he had written as to the requirements of fever hospitals would apply to hospitals of all kinds, being general principles of sanitation; and that the paper had been written rather in the spirit of inquiry than of dogmatism. Thegeneral awakening of the public mind to the importance of the isolation of persons suffering from infectious diseases was quite recent, as evidenced by the fact that thirty years ago there was in this country no organised system of infectious hospitals, and that London at that time possessed only two—viz., the London Fever Hospital at Liverpool-road, Islington, and the Small-pox Hospital at Highgate, both institutions being entirely supported by voluntary subscriptions. Some of the general hospitals received fever patients under conditions of very imperfect isolation; failing which, infectious cases were sent to the workhouse, with results which could be easily imagined. One great cause of the increased use of fever hospitals had been the passing of the Infectious Diseases (Notification) Act, 1889. This Act provided—

"(*a*) That the head of the family or the nearest relative of the patient resident in the building must give immediate notice (in case of infectious disease) to the Medical Officer of Health.

(*b*) That the medical practitioner attending on the patient, on finding a case of infectious disease, must notify to the Medical Officer of Health for the district the name of the patient, the situation of the house, and the infectious disease from which the patient is suffering."

The site of an infectious hospital should be, if possible, just outside the town or village for which it is intended. The question of transport of the patient could not outweigh the great advantages to be derived from the hospital having open fields as its surroundings. Good ambulance arrangements would overcome all difficulties as to transport. There should be two entrances to the hospital, one the "infected entrance" and one the "non-infected entrance," both controlled from the same porter's lodge. A wide roadway should run round the whole of the site, as a neutral zone to separate the hospital from the surrounding property. The axes of the ward pavilions should be as nearly as possible north-east and south-west, in order to provide for the maximum quantity of sunlight and the minimum of shade. This was of the utmost importance, and should be carefully borne in mind in the selection of a site. The ward pavilions should not, where practicable, be of more than one story in height. This might necessitate the purchase of a larger site than otherwise, but the compensating advantages were many. The whole of the several buildings of an infectious hospital should be completely isolated, and stand perfectly free, without communicating corridors or covered way of any kind. The ward pavilions for diphtheria or enteric fever should be separated at as great a distance as possible from those for scarlet fever. The isolation wards should be well separated from the remainder of the hospital. The official department and the kitchen and stores should be centrally situated, and the stores should be as near as possible to the "non-infected entrance." The staff quarters should be quite free from, and unsurrounded by, the ward pavilions or other infected buildings. The three classes of the subordinate staff in a large hospital—viz. nurses, female servants, and male servants—should have separate and distinct homes, each home being under the *resident control* of the principal officer responsible for its discipline. The laundry should be as free as possible from the hospital proper and from the staff quarters. No infected building should be nearer than 40 ft. to the boundary, nor to any other building, infected or otherwise, in the hospital. As to the maximum number of beds for which an infectious hospital should be built, the requirements of large towns necessitated the provision of a large number of beds; but it was an open question whether the aggregation of a large numbers of acute infectious cases upon one site was desirable, and whether it would not be a preferable course to arrange hospitals for a smaller number of beds, and to increase the *number* of such hospitals in order to provide for the total number of beds required. [After going through some plans illustrating various arrangements and systems of planning, the author returned to the general consideration of the various portions of a hospital; from this portion of a very long and most valuable paper we can only extract a few leading remarks.]* There should be two receiving wards, one for scarlet fever and one for diphtheria and enteric fever, which should not adjoin, but should be as near as possible to the wards of their respective diseases. Each receiving block should contain a good-sized and well-lighted receiving and examination room, with a bath-room adjoining (the doorways to these rooms being wide), together with a room for the ambulance nurses, to which should be attached in each case a warmed store for blankets and gowns. The necessity for a careful examination of the patient in a properly-appointed receiving ward was fully recognised in this country, if only as a safeguard against errors of diagnosis on the part of the certifying practitioner. There would be, generally, two main groups of ward pavilions in an average-sized fever hospital—viz., one group for scarlet fever and another group for diphtheria and enteric fever. The first important question to be decided in connexion with the ward pavilion was whether there should be one main ward to include convalescing cases as well as acute cases, or whether there should be two separate wards for the two classes. It was undoubtedly an advantage for the convalescing patient to be removed from the disturbing surroundings of an acute ward as soon as possible; but it must be borne in mind that the multiplication of wards increased the number of ward adjuncts and the duties of nursing. It was also difficult, when the ward pavilion was so divided, to find a suitable position for a properly-lighted and ventilated separation ward. The ward pavilion would comprise the following upon

* All our readers may not understand that the reason we only give short *résumés* of the Institute papers, while we generally print those of the Architectural Association in full, is that the Institute retains the copyright of its papers, and we are requested not to print them except in the form of a condensed report of their main substance.

each floor :—The main ward and the separation ward ; the duty room ; the water-closets and sinks ; the bath-room and lavatory ; the linen-store ; the larder ; the nurses' water-closet, lavatory, and robing-room. If there were two stories, the staircase leading to the upper floor should be completely isolated from the lower ward and its appurtenances. The maximum number of beds to a ward should be twenty for scarlet fever, and twelve for diphtheria and enteric fever. There were three items to be arranged in connexion with the cubic space—viz., the linear wall-space per bed, the floor-space per bed, and the height of the ward. There was now a general consensus of opinion against very lofty wards. In fact, a height of 12 ft. would be sufficient were it not that with that height a long ward would present a somewhat dwarfed appearance, and we might consider 13 ft. as the most suitable height. The width of the ward should be 28 ft. at the least. The windows (which should be double-glazed to prevent loss of heat) should have an area of not less than 1 ft. for every 70 cubic ft. of ward-space. All internal angles should be rounded. The walls and ceilings of the wards should be finished with Keene's cement, and this, after an interval, should be painted and varnished. A ward thus finished internally could be easily and frequently cleansed, without repainting. The floor of a ward was a subject upon which there was much difference of opinion. Teak was undoubtedly by far the best of all wood floors, being hard, durable, and unaffected by moisture, but it was dark and dull in appearance, and detracted from the cheerfulness of the ward. Terrazzo floor was the most suitable for infectious hospitals. The furniture of a ward should be of a character not likely to harbour infection. The most suitable materials were iron and glass, the use of wood being avoided as far as practicable. It was a convenient arrangement for the water-closets and slop and scalding sinks to be placed together in a turret separated from the ward by an intervening lobby having windows on opposite sides. This lobby should be large enough for convenience of access, but not so large as to admit of ward chattels or refuse being placed there. This turret was placed in various positions by architects, some placing it at the end of the ward ; but for convenience of administration he preferred to place it on the east side of the ward, about midway in the length of the ward. In this central position it was more easily reached by both patients and nurses. Two sinks were required in this turret : a slop sink and a scalding sink. A very excellent slop-sink has been designed by Professor McHardy and patented by Messrs. Dent & Hellyer. This sink not only served the ordinary purposes of a slop-sink, but it was formed and fitted to enable bed-pans and urine-bottles to be easily washed and cleansed therein, without manual cleansing and unnecessary handling of the utensils. With a view to reducing the cost, and also of carrying out the "bracket" principle throughout, Messrs. Dent & Hellyer had, at his suggestion, quite recently produced another sink, to be much less costly, and for use where a separate scalding sink for cleansing urine vessels and other articles was provided. (Illustrations of these two sinks were given). The other sink required in the turret, to be called the "scalding sink," should also be of strong glazed fireclay, and be about 3 ft. long, 2 ft. wide, and from 10 in. to 12 in. deep, and should be fitted with metal rack, for the purpose of cleansing urine-bottles. There should also be in this turret a cupboard open at the back to outer air, for chamber utensils kept for examination. After describing the requirements in some other portions of the hospital, the author turned to the subject of warming and ventilation, which must be considered together as one operation. This subject must also be dealt with in close relation to climate. Ours was a temperate climate, and free from those extremes of temperature which existed in, say, Germany and the United States. He mentioned these two countries because they possessed some very complete systems of warming and ventilation, suitable doubtless to their own climates, but the application of which to our own surroundings would not necessarily be successful. The key to the whole position here was that for at least 300, if not 330, days in the year it was possible for us to open the windows of a hospital ward without danger or discomfort to the patient ; and we must keep this fact prominently in view when dealing with the question of ventilation. It was essential that the wards and their adjuncts (except, of course, the larder) should all be kept very much at the same temperature, in order to avoid draughts being caused by the opening of doors. As to the nature of the heating apparatus to be used, his own experience was most strongly in favour of low-pressure water apparatus, the water circulating from a steam-heater placed in the basement of each ward pavilion. The wards, then, should be warmed (*a*) by open ventilating fire-places, and (*b*) by the diffusion of fresh external air, warmed by passing over hot-water heating surfaces in the wards. Objections were urged against open fireplaces on the ground that it was a wasteful means of producing heat ; but this drawback was more than compensated for by the cheerfulness of the open fire, and by the very important fact, too frequently overlooked, that an open fireplace, with a fairly good draught in the chimney, was about the best exhaust ventilator that could be found, and one that acted near the floor level. The warming by open fireplaces should be supplemented by the admission of warmed external air at the sides of the ward. The external air was admitted through glazed channels in the external walls (by preference under the windows), passed over heated copper radiators, through a cast-iron case with moveable front, and thus entered the ward. The inlet both of cold and warm air should be capable of regulation. These inlets should be further supplemented by galvanised-iron hit-and-miss or valvular gratings placed in the external walls at the floor level at the back of each bed. No attempt need to be made to warm the air passing through these inlets. The main inlet of external air would, however, be by means of the ward windows. The ceiling of the ward should be flat, without beams projecting below. The windows should run close up to the ceiling line, and the upper portion (about one-quarter of the full window height) should consist of a hopper-hung sash, the hopper sashes being glazed and fitted close up to the ceiling. There should be means of regulating the width to which this sash will open. If these windows were thus opened on both sides of the wards, those on one side would act as inlets, and the opposite ones as outlets, in normal conditions of the wind. The exhaust ventilation already described—viz., that by open fireplaces and open windows could, with advantage, be supplemented by vertical shafts, carried up well above the roof-ridge, and covered with some kind of terminal to prevent down-draught. These shafts should be of brick, glazed internally and with rounded internal angles, and a good upward current could be created by the insertion of a coil of steam or hot water. These shafts should each have two valvular openings leading from the ward—one at the ceiling line and one at the floor level—and these should be so adjusted in relation to each other that when one was open the other was closed. These ventilating shafts would be of considerable value when it is not possible to open the windows. The warming apparatus should be capable of maintaining in the coldest weather a temperature of 60 degs. Fahr. in the scarlet-fever wards, and 65 degs. Fahr. in the diphtheria and enteric wards. In Germany and America a somewhat higher temperature was usually maintained. It was important that the apparatus should be so arranged that it could be regulated and controlled from within the ward.

[The author then proceeded to consider the subjects of sterilisation of air, airing courts, discharge wards, mortuaries, nurses' homes, laundry, disinfecting apparatus, drainage, &c., &c. The paper, which was far too long to be even read as a whole at the meeting, will be found, when printed in full in the "Transactions" of the Institute, with its numerous plans and other illustrations, a most valuable paper for reference and study in connexion with its subject.]

Mr. P. Gordon Smith said that the paper dealt very largely with the gigantic hospitals of London, and left a great deal unsaid which might be dealt with if time had permitted, in regard to a vast number of smaller hospitals existing, and to be built in all parts of England and Wales. The hospital authority for London was unique, in possessing amongst its members men who were special hospital experts, with a staff of consultative medical superintendents of enormous experience, whose opinions must always carry great weight. Much that Mr. Aldwinckle had referred to, as being necessary and desirable in large hospitals, would be altogether inappropriate in the case of smaller ones. The question of having two entrances had been touched upon, and, however desirable it might be, though he did not consider it to be a necessary condition, it was altogether out of place in a small hospital. Then as to the number of beds, the Asylums Board had fixed a limit of 500 beds, but that was much too high, though it was more a question for the doctors to settle than for architects to discuss. The architects of the London Hospitals were fortunate in having for clients such promoters of hospitals, with abundant means at their disposal, and with a strong desire to provide everything there could be any excuse for saying was necessary. It was quite different, however, where a hospital had to be provided and supported by voluntary contributions. Some years ago he advocated the omission of the corridors and covered ways, and about that time even Mr. Aldwinckle considered them necessary, and provided them in the case of two big hospitals. Mr. Aldwinckle had now apparently changed his opinion, and advocated the omission of these corridors. He (the speaker) believed them to be quite unnecessary, and, if omitted at the outset, they could be added afterwards, if necessary ; in fact, even large hospitals could be successfully carried on and administered without these corridors. Another item which might be saved was the staff laundry, it being wholly unnecessary ; it greatly increased the difficulty of management, and was certainly a considerable expense. The gate-porter's lodge should consist of one room and an office, and when nurses were ill with an infectious fever they should use the ordinary wards. He had much pleasure in proposing a vote of thanks to Mr. Aldwinckle for his interesting paper.

Dr. McCrombie' said he had been struck by the strong condemnation of the covered way. He had never met anyone who lived inside a fever hospital who objected to it, and for the comfort and convenience of the staff a covered way was a great advantage. He could imagine an objection being made to a corridor, but he hoped that the management of the Asylums Board were not prepared to dispense with a covered way. He believed that the terrazzo flooring might form a solution to one of the great difficulties they had to contend with. The floors should be kept scrupulously clean, but he was afraid they were never so clean as they should be. Mr. Gordon Smith had said that the porter's lodge should consist of one room instead of two or three ; but the gate was an important thing, and it was essential that the porter should have control over the officials. The porter should, therefore, be a married man, and have a house for himself.

Dr. Goodall could not see the reason for having two entrances. He was also surprised to hear Mr. Aldwinckle say that there should not be any covered ways, as it was bad enough to have to go from one ward to another on a cold night in the open air. During the past year he had been able to convert his committee to covering a way between two blocks, and it had proved a great convenience to the staff.

Mr. E. T. Hall considered this was one of the most important papers they had heard for a long time. He would like to know from Mr. Aldwinckle whether he considered a hospital of 200 beds preferable to one of larger size? Because in another part of the paper he said it was the administrative features of a hospital which so largely added to the cost. He believed that the manager of the Asylums Board had found a usual unit, from the administrative point of view, was to deal with a population of 50,000 people, and taking the standard of one bed per thousand. That was one of the grounds, he understood, on which they decided to make their new hospitals to contain about 500 beds, though they had never laid down any actual limit. He had listened with some interest to Mr. Aldwinckle's observations as to the two entrances, but he could not see what difference it would make whether there was one or two. As to the porter's lodge, he believed the theory held by the managers of the Asylums Board was that the gate porter should be a man who was of superior caste to the ordinary man-servants of the hospital ; that he should be a man of considerable responsibility—say of the class of a sergeant-major ; and that he should have home comforts, which would not necessitate his mixing with the staff of the hospital. For that reason it was suggested that he should not only have a bedroom, but also accommodation for children. On the Continent covered corridors had been done away with, but it must not be forgotten that people abroad had not always that consideration for the servants that we in England had. Irrespective of the doctors and the nurses, the servants had to be considered, and all the committees he had come in contact with thought it necessary to have corridors for the comfort of the staff. Such sanitary appliances as were used in some of the foreign hospitals would be at once

condemned in this country. Mr. Aldwinckle seemed to suggest that hot-water pipes should pass round the wards, but he considered that most objectionable. They were simply lodgments for dust, and it was far from easy to get at the bulk of them to clean them. It was better to put the heat where it was desired to check the radiation from the windows. The covering of the walls was a matter of great consideration. Cement had been recommended by Mr. Aldwinckle, but he (the speaker) had patented a new process of covering the walls with large sheets of glass, which would be a permanent decoration, and, at the same time, be impervious to disease germs.

Dr. Downes remarked that Mr. Aldwinckle's most important point was as to what should be the size of the hospitals, but that was not altogether an architectural question. He thought everybody would admit that the larger the hospital the greater the economy in its construction and administration. At the same time, the Asylums Board had gone quite far enough in their concession to economy when they took 500 beds as the figure in their instructions to architects. He hoped they would resist, as far as possible, any pressure to increase the accommodation. Indeed, he did not think any medical superintendent could give the individual attention which was so necessary if a hospital for acute cases was to exceed such a figure. The question of how many beds should be put on an acre was a fallacious basis to go upon, because there might be 100 acres of land, and yet the hospital might be crowded into one corner of it. He would rather see, as the Asylums Board had laid down, some definite minimum of areas between the constituent blocks of the hospital, as being the governing principle, which should be looked to. With regard to points of structure, one of the great principles which should be looked to was to enclose as little as possible. The less enclosure they could do with the better from the medical point of view. As to the vexed question of corridors, he had observed that if he went to a hospital where they had corridors he was told they could not do without them, while, if he went where there were no corridors, they said they did not want them. He agreed that the gate-porter should not mingle with the staff, and he might really live outside. He was somewhat conversant with the circumstances under which the width of 26 ft. was adopted for the wards by the Asylums Board. It was urged that the greater the width the greater were the difficulties of cross ventilation, and although he had pleaded for a width of 26 ft., he should be sorry to see a greater width. In fact, he would rather see the linear bed space than the cross-section of the ward increased.

The vote of thanks was then put to the meeting, when it was very heartily received.

Mr. Aldwinckle, in replying, said he had gone into the question of large hospitals, because the extremely small ones were so admirably provided for by the plans issued by the Local Government Board. There was a distinct and definite reason why outsiders, who had business with the hospital, should be taken into a non-infectious part, and have no opportunity of coming into contact with the infected part of the hospital. No doubt hospitals cost a good deal of money, but he did not believe that the Asylums Board were spending more than other people, because the hospital at Glasgow was to cost as much as the London hospitals, and yet it would not contain so many beds. He did not believe the large hospitals were cheaper than the smaller ones; they should compare good hospitals in London, with good ones in the provinces. With regard to the covered ways, he did not mind being told he had been converted, as long as it was in the right direction. The majority of isolation hospitals in England were built without covered ways of any kind. Mr. Hall seemed to suppose that he advocated hot-water pipes round the wards, but that was by no means his intention. He was sorry that Dr. Downes had arrived at finality in the width of wards, but he admitted that the increase of width seriously increased the expenses.

The President announced that the next meeting would take place on Monday, March 11, when the meeting would be a special one, to elect the Royal Gold Medallist for the current year, to be followed by a business meeting for the election of members.

The proceedings then terminated.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—On the 20th ult. a meeting of this Association was held Mr. C. H. Compton in the chair. It was announced that subscriptions had been collected in Ireland and elsewhere for the purpose of effecting excavations in the Hill of Tara, and that the Association had consented to send a representative to help to superintend the proposed works. Mr. Quick described a curious bed-warmer from Bromley, Surrey, now in the Horniman Museum. Mrs. Dent, of Sudeley Castle, sent for exhibition a drawing of a bronze steelyard, found at Winchcombe, bearing various arms and devices of Richard, King of the Romans, the founder of the adjacent Hayles Abbey. Mr. Loftus] Brock, F.S.A., exhibited a series of ancient seals of various English personages, illustrating the art of the fourteenth century. Mr. Oliver described a bellarmine of Flemish manufacture, found recently in the east of London. Mr. Barrett produced rubbings of the enamelled brass of Sir N. Gainsford and Lady for Carshalton Church, Surrey, erected during the lives of the persons represented, the date, 14—, never having been filled in. The monument is on what was until recently the north side of the chancel. Mr. Thos. Blashill exhibited a series of beautifully-written charters and grants, relating to Sutton-in-Holderness, some retaining the seals. One of these documents, dated 1349, the year of the Black Death, indicated many changes of ownership of property owing to that calamity. One of the seals was the impression of an antique gem. A paper was then read by Mr. Richard McDonald on the Hill of Tara and the proposed excavations. After describing the condition of the hill and the various ancient forts, the remains of which still exist upon it, the notices of the old Irish chroniclers were passed in review, not the least remarkable of which is the record of the burial of the Princess Teah beneath the hill, in a sepulchre of stated dimensions.

Correspondence.

To the Editor of THE BUILDER.

LONDON BRIDGES.

SIR,—Adverting to Mr. Mountford's remarks in the discussion after the reading of your paper on the 15th ult., it may, perhaps, be not inopportune to say there is a bridge of the kind he cited across the Thames. The Maidenhead Railway Bridge was built of brick by I. K. Brunel in 1835, with a span which had not been before attempted in that material—128 ft. for each of the two elliptical arches, with a rise of 24·25 ft. only. The red-brick piers at Charing Cross are, I believe, the original piers of Hungerford Bridge; they have lately been lengthened up-stream for a widening of the railway.

W. M.

COUNTY BUILDINGS, DURHAM.

SIR,—On February 9 you called attention to the delay in settling this competition. You repeated the two reasons officially given for this, first, the illness of the assessor, and second, the near approach of the elections. These reasons are more official than anything else. In the West Riding it seems to be known that the assessor did make his award to the county officials before the last quarterly meeting (January 30), and this award was not accepted. After the meeting the above official reasons for delay were published.

By the conditions of the competition the council agreed to call in a "competent architect" to assist in the selection. No one knowing the assessor would question his competency to act as an architect, but, strictly speaking, he is a county surveyor and engineer, and would be described as such.

Architects engaging in this competition had a right to expect that an architect of standing in the profession would have been appointed to assist in its settlement; certainly the award of such a man would—rightly or wrongly—have had more weight with the profession.

"A COMPETITOR."

The Student's Column.

BRICKS AND TERRA-COTTA.—VIII. & IX.

FUSIBILITY OF BRICK-EARTHS.

THE raw material, as previously remarked, is entirely made up of mineral matter, whether of organic or inorganic origin. These minerals may, roughly speaking, be divided into two groups, according as they are fusible or infusible. We have to ascertain how far the infusible portion may, on the application of heat, be melted or partially melted by the fusible ingredients—in other words, whether the latter act as fluxes. Then we want to know whether any two or more of the infusible substances are capable of forming fusible compounds. The subject appears, at first sight, rather complicated, but by a species of analysis we trust to make it very easy. We must not anticipate however. The simplest way to commence is to experiment with the degree of fusibility of the various minerals concerned, or rather of certain of these and their compounds; for, as may be imagined, those which are fusible do not all melt at the same temperature, or under the same conditions.

Silica.—This occurs in clays in three different states—namely, crystalline, amorphous, and as entering into the composition of different compounds. When crystalline it is known as quartz, which mineral and flint (the amorphous kind) are the common constituents of sandy brick-earths and loams. It is infusible except at the very highest temperatures, but when existing as pure quartz it neither softens nor melts at the highest furnace temperatures. It may be decomposed, however, by carbon in the presence of iron (amongst other things) at a white heat, forming a silicide of the metal. Silica, naturally, combines with all the bases capable of forming silicates, and is then fusible. Seeing that by far the greater proportion of the sandy constituent of brick-earths is made of quartzose and flinty grains, we thus know that much of the material is quite refractory. As will be gathered from what we have just said, in order to make satisfactory fire-bricks where the raw material is chiefly composed of silica (*e.g.*, as that of the Vale of Neath, Glamorganshire) it is necessary to add a small proportion of some base, such as lime, to the earth in preparing the same, and the quantity to be added may vary from 1 to 2½ per cent., according to the proportion of bases present in the raw material. See also our observations under the headings of lime and magnesia, to follow.

Alumina.—When pure, this, also, is infusible; it does not generally combine with bases, which fact is of great importance from a metallurgical point of view, and is advantageous in many respects so far as brickmaking is concerned. Even when it does combine, the aluminates formed are not so fusible as silicates. In nature, however, it is frequently impregnated with so much iron that it is difficult to separately consider each body, at least as affecting our present inquiry. When iron is absent, alumina is very refractory.

Lime.—A base which, *per se*, is infusible, but when combined with silica and other acid substances becomes fusible—a point the student is specially desired to note. It may not be unprofitable here to remark that when the lime exists as calcium carbonate, the carbonic acid of the latter is driven off by heating, leaving simply the base behind. This basic substance, when the carbonate of lime exists as small pellets, may remain in the brick practically uncombined (only badly agglutinated), and in any case the quality of the brick is seriously affected, generally by the creation of small holes from which a number of minute cracks radiate irregularly. Even when these are not very apparent, from the circumstance that the fragments of carbonate of lime were very small, it may be assumed that the combined effect does not, on the whole, improve the finished product. Apart from other considerations it would appear that to artificially mix lime (which has been deprived of carbonic acid), with the pure silica and alumina in such quantities as will hereafter be given, is preferable to mixing ground limestone, or chalk. We are speaking, of course, of the best quality of bricks, chiefly intended for refractory purposes, and the student will understand that this is rather a standard to be worked up to than to be adopted in its entirety for low-class bricks. From financial and other purely commercial reasons, ordinary building bricks cannot always be made on the most approved basis, and good grinding and pugging can materially minimise the effects of those substances having a tendency to deteriorate quality.

Magnesia.—This behaves in some respects like lime—it is basic and infusible. In the manufacture of bricks and linings for certain steel furnaces, and in making basic bricks generally, magnesian limestone is largely called into requisition. This rock, sometimes erroneously called dolomite, is typically composed of equal proportions of the carbonates of lime and magnesia. Before it is used, therefore, the carbonic acid is driven off by calcination. Magnesia, when combined or mixed with silica and other acid bodies, forms fusible compounds.

We have now dealt with the principal bodies forming the basis of clays: if the student turns to the last article he will notice that clays are chiefly made up of silica, alumina, lime, and magnesia—

the four substances that have just been described. It will have been observed that by itself each of these is practically infusible, but is ready to form a fusible compound with suitable bodies. They are essentially refractory, and may combine together in certain proportions without losing their refractory nature. Let us now consider the behaviour under great heat of other minerals and substances commonly found in brick-earths.

Iron Pyrites.—This parts with about half its sulphur at a white heat, and forms ferrous sulphide. Mr. Robert Mallet, F.R.S., has observed that unless this mineral is separated from the clay in the preparation of the earth for brickmaking, it is impossible to obtain either durable or well-coloured bricks from the material. The pyrites in the kiln is but partially decomposed, oxide of iron and basic sulphides of iron remain. When at an after period these are exposed to air and moisture, which are absorbed by the brick, oxidation takes place, sulphate of iron, and frequently also sulphates of lime or alums (sulphates with double bases), are formed, and, crystallising within the mass of the brick, split it to pieces.

Iron Oxide.—This appears in nearly all the analyses of clays that we have given. According to the observations of Mr. Arthur H. Hiorns,* it is very stable, non-volatile, and of a red colour. At a white heat it gives up oxygen. By heating with carbon, or carbonic oxide, it is reduced to the metallic state; but if much carbonic acid is there, ferrous oxide may be formed, which combines with any silica present, forming a fusible silicate; for this reason it is sometimes used as a flux. In presence of sulphur it oxidises that element to sulphurous acid. The existence of a considerable amount of iron oxide in clays therefore is injurious, though a small proportion may be useful (depending on circumstances) as acting as a flux. At the same time we must remember that many clays rich in alumina, silica, and iron will hardly fuse at the melting-point of cast iron, whilst bricks are usually baked rather below a yellow or white heat; but we shall have occasion to refer to this in more detail later on.

Fluorine occurs but sparingly in brick-earths; when combined with calcium, forming calcium fluoride, or fluor spar, it acts as a flux by uniting with silicates, and by reacting with silicates and evolving the gas silicon fluoride. It also forms fusible compounds with sulphates such as selenite or gypsum.

Sulphate of Lime is found in practically all strong clays in the crystalline form (transparent crystals of selenite); also in thin, streaky, and marly beds in the Midlands, in its fibrous and amorphous forms. In the latter case the beds are commonly alluded to in the brickyard as "gypsum veins." It need hardly be remarked that in presence of sufficient heat, far below that required in the manufacture of bricks, hydrous sulphate of lime decrepitates, when the sulphuric acid is driven off and we have plaster of Paris. Practically the same observations in regard to its general behaviour apply as were made in referring to lime. It is not a desirable constituent of brick-earths except in small quantities.

Potash and *Soda* are, in nearly every instance, present in clays and brick-earths in such small proportions as that their occurrence is a matter of little moment. If, perchance, the sandy portion of the earth contains much of the mineral glauconite, however, as in certain Cretaceous green marls, the potash is by no means insignificant. Speaking in general terms, these alkalies combine readily with silica in the kiln, and an excess of them therefore tends to render brick-earth too readily fusible.

Sodium chloride, although not indicated in any of the analyses of brick-earths we have given, exists in extremely minute quantities in nearly all of them. It is very commonly met with in the marls of Triassic age in Cheshire and elsewhere in England, in which case the earths are either totally unfit for brickmaking, or they have to be specially treated to get rid of it. In any case the bricks produced are generally inferior in quality, for the reason presently to be given. The student should understand, however, that all the marls of the Trias are not impregnated with this salt; indeed, some of the best building bricks in the country are manufactured of the New Red marl. Chloride of sodium, or common salt, says Mr. Mallet,† is not only a powerful flux when mixed even in very small proportion in clays, but possesses the property of being volatilized by the heat of the brick-kiln, and in that condition it carries with it, in a volatile state, various metallic compounds, as those of iron, which exist in nearly all clays, and also act as fluxes. The result is that bricks made of such clays tend to fuse, to warp, twist, and agglutinate together upon the surfaces long before they have been exposed to a sufficient, or sufficiently prolonged, heat to burn them, to the core, into good hard bricks.

Apart from the salt found in the natural raw earths used in brickmaking, we have to consider here the accidentally, or purposely introduced salt into the material in process of manufacture. In certain districts the sand used by the brick-moulder to prevent the clay from adhering to his mould or table, or used in connexion with machinery to effect the same end, is impregnated with salt obtained either on the sea shore, in low cliffs, or inland. At first sight it would seem that the quantity thus employed is too small to have any practical effect in the burning, but such is not the case. Indeed, in certain districts we could name, an extra amount of this fine, sharp, quartzose sand with salt, is used expressly to put a sort of veneer on the exterior of bricks that would otherwise not appear to be of such good quality. We do not wish to expose any secrets of the trade, and we do not desire to convey that the veneer thus produced has not an exceedingly beneficial effect so far as weathering is concerned; but we cannot shut our eyes to the fact that many of the skin-deep hard bricks sometimes present a very similar appearance to goods of infinitely superior quality as being hard throughout, instead of at the surface only. The result produced when such bricks are cut for face-work can be better imagined than described, though we have no doubt that the "jerry-builder" would be able to surmount that little difficulty. We should not like to answer for the number of cases in which these "hard-faced" bricks have been made to do duty for what was believed to be bricks of a very different stamp, and paid for accordingly. The uses of salt and similar substances to make a hard, if brittle, face on various classes of brick goods have been known for some years. So long as these are not put to a dishonest purpose we have no objection to them, but we thought these few notes on the matter would not be out of place.

In some instances sand from the estuary of the Thames, of course impregnated with salt, has been employed for the purpose named, though we know full well that in most cases it is used openly and the products are correctly described. The moulding sand serves other useful purposes; it assists in preventing the clay from cracking, though we think its value in this respect is much over-rated. Salt in the moulding sand also influences exterior coloration to some extent, imparting a grey tint when burnt.

Carbonaceous matter is not, on the whole, a desirable constituent of brick-earths. Under certain conditions it does not burn completely, so that there is discoloration locally, and not infrequently it renders the interior of the brick a different tint to the exterior. This remark applies more particularly to stiff and dense clays. We refrain for the moment from alluding to the carbonaceous matter introduced in the shape of cinders and "breeze."

THE INGREDIENTS OF COMMON BRICKS.

It is not easy to sum up in a few words the several qualities which together constitute a good brick-earth, or to state what should be added to or eliminated from a raw earth to render it fit for specific purposes. There are so many different kinds of bricks, and they are required for such divers objects, that what would be regarded as a desirable property in one, might be looked upon unfavourably in another. Not only this, but the earths themselves are ever varying, and it is often rather a question of how much of a certain deleterious ingredient may be admitted than what should theoretically constitute a good earth. Nevertheless, we will try to lay down a few general principles.

Probably no two brickmakers agree as to the proper or best way of proportioning the different ingredients used in the manufacture of their bricks. Commencing with those of common bricks, they may be of clay, marl, and loam in all their variety, with the mixture of a variable proportion of sand, chalk, breeze, small coke, &c. The clay may be red, yellow, blue, greenish blue, grey, or mottled, it is often light, loose, and sandy, frequently heavy and greasy, and mostly friable when exposed to the air for any considerable length of time. Remembering what has already been said, it will easily be recognised that if a clay contains a surplus quantity of sand, it will require the assistance of some dry substance to modify the action of the fire in burning, as the siliceous particles will fuse and run, in presence of suitable bases (such as are often found in common brick-earths,) under the action of intense heat. In such cases, it is clear that an increase in the quantity of the chalk will be of great service if properly blended with the clay, because it will combine with the silica, or rather assist in its partial fusing or agglutination. The object of adding breeze, coke, &c., in the preparation of earths for ordinary building bricks is to assist in thoroughly burning the material inside as well as outside. From this it will readily be seen that where the ingredients of the brick-earth have a tendency to melt or run, it is desirable not only to prevent that in the way just indicated, but to materially decrease the quantity of breeze mixed with the clay; otherwise the whole will form clinkers instead of good bricks. The more alumina there is in the clay the better will be the brick if it is properly tempered by the admixture of sand and breeze, the one to burn it, the other to prevent its shrinkage, as far as possible, when in the kiln.

Referring to malm-bricks, the basis of these consists of marl—an intimate mixture of clay and carbonate of lime, which is generally easy to work. To obtain fine-grained bricks of even colour, it is advisable to introduce both sand and breeze, the latter in larger proportion, perhaps, than with commoner kinds of clay, because the lime incorporated with the earth demands that the latter shall be burned more evenly throughout than when the base contains a greater quantity of silica. Moreover, the sulphur in the breeze combines with other ingredients in the alumina, and tends to brighten the colour of the brick by turning the clay more or less white, for when clay contains a large proportion of alumina, it has a tendency to turn white under the action of fire. From the foregoing it follows that if we add a large quantity of breeze to a clay overcharged with quartzose sand, the whole will most probably melt, and not run together in the proper form; whilst if, on the other hand, we do not add much breeze when there is only a little sand present, but an increase of alumina, the bricks resulting therefrom will be brittle and porous for want of a sufficiently disseminated flux to solidify them.

Now, as to the effect of adding clean quartzose sand to a clay poor in that material. If a strong clay, perfectly plastic, be moulded and left to dry it will be observed, in the majority of cases, that on contraction during the process a number of minute cracks form, which will widen out as the material becomes drier. The same thing will happen if the newly-moulded brick be subjected to the fierce heat of the midsummer sun, unless precautions are taken to shield them therefrom, even when the earth has been fairly well prepared. We cannot enter now into the various processes of artificial drying; the student will understand that in drying in the open air uniformity is the principal thing to be aimed at. A great deal depends, however, on the relative plasticity of the raw earth and the amount of water it contains. It has been laid down as a wholesome maxim that the quantity of moisture the clays naturally absorb should be interfered with as little as possible; in other words, the smallest quantity of additional water that will suffice to render the mass sufficiently workable should be employed in moulding.

In brickyards of small magnitude the earth should be as fresh as may be, and used directly it is brought to the moulder's table. We know perfectly well that familiarity with the material leads the intelligent workman to preserve it by covering it over with cloths and the like when not immediately used, but delays, especially in hot or windy weather, not only lead to difficulties in moulding the clays rapidly; they tend to produce inequality in size of the finished product, irregularity in drying, and so forth.

Assuming, however, that all these little things be well understood, we have to provide against the tendency in a numerous class of clays used in making common bricks to crack under any circumstances unless precautions connected with the preparation of the earths in the first place are taken. The necessity for such preliminary work may arise not only from the clay used being too strong, but from its containing grosser particles, of any kind whatsoever, than ought to be admitted into any but the very worst quality bricks. In a properly-regulated brickyard turning out good average products the large grit, pebbles, &c., are either ground up, screened, or treated in such a way as that the ultimate result is to improve rather than to deteriorate the earth.

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* "Mixed Metals," 1890, p. 57.
† Dobson, "Bricks and Tiles," 1893, p. 267.

In a very large number of instances, especially with the cheaper kinds of bricks so largely used, this work is only done in a very perfunctory manner. We desire to make clear to the student the effect of manufacturing bricks in which the breeze used is not fine enough, or in which pebbles, however small, are allowed to remain. As previously remarked, earth on being dried contracts, and cracks result. If small pebbles are present in it they may affect the general position and direction of these cracks, and by the unequal contraction, or rather the practical stability of the one and the contraction of the other, warp the whole. This effect is further accentuated in the burning process; it may be that the cracks are not obtrusive exteriorly, but the soundness of the whole brick is sensibly modified. The colour, too, is generally mottled, however well the earth may be burnt, when some of the ingredients are too large. Now, as this takes place when the grosser portions are admittedly too large to produce a sound material, everyone recognises the necessity of reducing their size to assure an average brick.

And when the clays used after some of the ingredients are thus reduced in size, would crack or warp, it is customary to intimately mix sand with them, which, apart from any metallurgical effects in the kiln, binds the whole together. In a slipshod fashion fair results have been obtained by moulding the earth in a large proportion of sand.

From the foregoing the student will perceive that the quality of the brick produced from any given quantity of earth, in the manufacture of common building bricks, largely depends on the judgment the bricklayer displays in assigning the proportions of the different ingredients added to the clay. When the clay is heavy, the addition of chalk, or lime, will lighten it; when it contains much sand, chalk will be necessary to take up the sand, so to speak, to keep it from running during burning; if, on the other hand, the earth should be of a marly nature, a little sand will often be of service; with heavy earth a larger proportion of ashes will be required than when the soil is light and friable, and it will be more difficult to burn properly in the former case than in the latter.

Still confining our attention to common bricks, their colour appears to depend upon the proportion of the different materials mixed with the clay, the time occupied in burning them, and the degree of heat to which they are subjected. Chalk, when properly prepared and introduced into the material, has the effect of lightening the colour when burnt. If lime is not used, it is desirable, in all cases, that as pure a limestone as possible should be employed, and it may be necessary to wash it prior to its being made into "cream," when that is employed. A superabundance of lime in clay tolerably free from siliceous sand causes the resultant bricks to be brittle and spongy, especially when it is not carefully incorporated.

Another point to be borne in mind is that, on burning bricks, the whole of the materials composing the earth, even when not sufficiently agglutinated—through infusible substances being present and not having suitable or adequate fluxing mineral matter—become changed in nature. This change mostly consists in induration of the otherwise unaffected particles. Compound oxides, when exposed to great heat, become exceedingly compact, even though they bear no traces of fusion; it has been observed that a kind of soft brick, producing a surface of pleasant appearance, and largely used in the early Georgian era, has no sign of agglutination, its particles having merely become hardened and compacted in burning. Practically the same may be said of many bricks made at the present day in which strength, and general use, are sacrificed to appearances and ease in cutting.

OBITUARY.

MR. EWAN CHRISTIAN.—We much regret to have to record the death of this well-known and much respected member of the architectural profession, which took place at his house at Hampstead, on the 21st ult. Mr. Christian was born on September the 20th, 1814, and was educated at Christs Hospital. He entered the office of Mr. Matthew Habershon as an articled pupil about 1830, and afterwards was engaged as assistant in the offices of Mr. Brown, of Norwich, and of Mr. Railton, with whom he worked on the competition drawing for the Houses of Parliament. Having injured his eyesight by close office work, he spent some time in out-door superintendence of buildings in progress (Lee Church and Colchester Union and some others), and also in making sketches for "Habershon's Half-timbered Houses." In 1837 he went abroad, spending some months in Italy, having for companions the late Sir Horace Jones and others. After his return he commenced business and gained several competitions. His first church was that of Hildenborough, near Tonbridge, and his first important church restoration (gained in competition) that of St. Mary's Church at Scarborough. Since then he has carried out very many church restorations, including those of Carlisle Cathedral and Southwell Minster, several of the London City churches, also many new churches, parsonage houses and schools in various parts of England and Wales, and also among mansions. Lavington Manor in Wilts, Lillingstone Dayrell, near Buckingham; Woodbastwick in Norfolk; a house for Mr. Vivian at Bosahan in Cornwall; and many other private houses. He also built the Bank at Charing Cross, for Messrs. Cox & Co.; the Economic Life Assurance office, Bridge-street, Blackfriars, and the Convalescent Homes at Folkestone and Seaford; a house at Burcote, Oxon, for Lady Crawford (now in course of building), and lastly, the National Portrait Gallery, which he did not live to see quite finished. Mr. Christian held the post of consulting architect to the Ecclesiastical Commissioners since 1850, and a similar appointment to the Charity Commissioners, since 1888. He was also for 40 years consulting architect to the Lichfield Diocesan Church Building Society, and to the Carlisle Diocesan Society, and was one of the committee of architects for the Incorporated Church Building Society. He joined the Institute of British Architects as Associate, in 1840, became Fellow in 1850, was subsequently Member of Council, Vice-President, and was elected President for 1884-6, while he received the Institute Gold Medal in 1887. As will be seen from our report in this issue of the last Institute meeting, that body was officially represented at the funeral of Mr. Christian last Monday.

GENERAL BUILDING NEWS.

CHELSEA EMBANKMENT COURT.—Twenty-three town mansions are now being built upon the former site of the Military and Naval Exhibitions, which will in future be known by the above name. The contractors are Messrs. J. Allen & Sons, who have taken the first contract at 92,000*l.*; and the architect concerned is Mr. Delissa Joseph.

ALTERATIONS TO CATHOLIC CHURCH, HAMILTON, N.B.—Hamilton Catholic Church was re-opened on the 24th ult., after alterations. The work has been done by: joiner work, W. Downs & Sons, Uddingston; painting, A. & T. Aitchman, Bothwell and Hamilton; glass work, H. Smith & Co., Glasgow. The whole has been designed and carried out by Mr. Joseph Cowan, architect, of Glasgow.

ALL SAINTS' CHURCH, HERTFORD,—The opening for public worship of the new Church of All Saints, Hertford—erected in place of the old edifice which, says the *Hertfordshire Mercury*, was destroyed by fire on December 21, 1891, took place on the 20th ult. The style is Perpendicular, and in plan will consist, when completed, of a nave of five bays, 73 ft. long by 26 ft. 6 in. wide, with western tower, about 26 ft. square, and north and south aisles, 20 ft. and 18 ft. wide respectively, with aisles opening into the tower, in which the font will be placed. At present, however, as only four bays out of the five are finished, the length of the nave is about 60 ft. The north porch will be hexagonal. There will also be a western entrance through the tower. The chancel is a continuation of the nave, and is 42 ft. long, giving a clear length from the face of the east wall of the chancel to the extreme face of the baptistry wall of 111 ft. by 26 ft. 6 in. wide, or a total width across the north and south aisles and nave of 65 ft. There is a south chancel aisle 33 ft. by 23 ft., with separate entrance and porch; and on the north side of the chancel there is an organ transept 30 ft. long by 15 ft. wide, and about 30 ft. high, with two arches opening into the north aisle. There are also clergy and choir vestries on the north of the chancel. The nave and chancel are about 40 ft. from floor to wall plate, and have open timber roofs of somewhat low pitch, covered with red tiles. The aisles have roofs covered with lead. There is a clerestory of double two-light windows running the whole length of the church; the north aisle is lighted by four-light windows, and the south aisle by three-light windows. The east window has seven lights. The tower will have a turret on the north side carried the whole height of the tower, and terminated by a leaded spirelet, the total height from the floor to the top of the parapet being 140 ft. The belfry stage will consist of double two-light windows, with a somewhat elaborate parapet with pinnacles at each corner and in the centre of each face; the height from the floor to the top of the parapet being about 115 ft. The exterior doors of the church are in oak, with ornamental wrought-iron strap hinges and fastenings, the latter being made at Mr. Hunt's forges at Hoddesdon. The seating is by means of open benches in plain oak (except in the chancel aisle, where chairs will be provided), with sloping seats, panelled backs, moulded rails, and moulded solid ends and canopied shafts. At the present time there is seating accommodation for about 700. Four open benches on the south side of the nave are specially provided for the Mayor and Corporation. The communion table is of carved oak. The altar rail is of moulded and carved oak. The credence table on the south side of the chancel is of Runcorn stone, carved, and the sedilia is of the same kind of stone. The lower portion of the pulpit is of moulded and carved Runcorn stone, and the upper portion of moulded Mansfield stone, with moulded shafts and traceried panels. It is approached by three steps from the choir floor. In the chancel aisle is a stained glass four-light window, with tracery openings above, depicting the four martyrs, SS. Stephen, Peter, Matthew, and Paul. On the south side is another stained glass window of three lights, representing episodes in the life of St. Elizabeth and her son, St. John the Baptist. The flooring of the sanctuary and choir is laid with encaustic tiles, with polished stone borders, while that underneath the seats is of pitch-pine blocks, the passages being laid with Yorkshire flags. The lighting of the church is by means of six gas pendants on each side of the nave and chancel, suspended from the hammer-beams of the roof, while the aisles are lighted by ornamental brackets fixed on the walls. This part of the work has been carried out by Mr. C. Cowen, of Castle-street; the ornamental fittings being prepared by Messrs. Hart, Son, & Peard, of London. The warming is on the low-pressure system, the work having been carried out by Messrs. Seaward & Co., of Lancaster. The stone used for facing the walls of the edifice both internally and externally, is flecked red Runcorn stone from the quarries at Weston Point, near Runcorn, Cheshire. The architects were Messrs. Paley, Austin, & Paley; the contractors, Messrs. Smith Bros., and Mr. J. A. Hunt, and the clerk of the works, Mr. A. Fincham. The stone-carving was carried out by men in the employ of Mr. Bridgeman, of Litchfield; and the whole of the wood-carving by Messrs. Hatch & Son, of Lancaster.

ENLARGEMENT OF CHURCH SCHOOLS, LEEDS.—St. John the Baptist Church Schools, situated in Newtown, Leeds, have been enlarged. In 1892 the buildings were condemned by the Education Department. It was decided to add another story and cover the whole with a new roof. Before the extension was commenced there was accommodation for 196 children and 119 infants. Now 551 children can be accommodated. Besides the enlargement, four cloakrooms, with lavatories, have been provided. The upper rooms are approached by a new fireproof staircase. The infants' department has been remodelled, and a class-room and lavatory added. Hot-water pipes have been introduced, the rooms fitted up with wood dadoes, the windows reglazed, the roof-timbers dressed, moulded, and varnished, and new Welsh slates substituted on the roofs. An entirely new system of drainage has also been carried out. Mr. W. H. Dews was the contractor for the brick- and stonework; Mr. Banks Mawson for the woodwork; Mr. J. W. Watson for the plaster-work; Mr. James Season for the slating; Mr. Rowley for the plumbing and glazing; Mr. George Thompson for the painting; and Mr. Joseph Woffenden for the heating. The several works have cost about 2,000*l.*, and have been carried out under the superintendence of Messrs. Smith & Tweedale, architects, Leeds.

SANITARY AND ENGINEERING NEWS.

SUTTON-IN-ASHFIELD SEWAGE PURIFICATION SCHEME.—On the 22nd ult. Colonel Durnford, R.E., one of H.M. Local Government Board Inspectors, held an inquiry into an application of the Sutton-in-Ashfield Urban District Council for sanction to expend the sum of 9,600*l.* for completing the sewers of the town, for purchase of land, and for works of sewage purification. The present population of Sutton-in-Ashfield is 10 563, which is rapidly increasing. Mr. M. C. William Bishop, Surveyor to the Council, produced and explained the plans, stating the urgent necessity for immediately carrying out the work of sewage purification, in order to meet the wishes of the Duke of Portland. The International Ferozone and Polarite process of purification has been selected.

THE NORTH BERWICK DRAINAGE SCHEME.—On the 15th ult. the North Berwick Police Commissioners held a meeting in the Council Chambers to give opportunity to all persons interested in the drainage scheme adopted by the Board to be heard thereupon. No objectors appeared. The scheme is to be carried out in accordance with plans prepared by Messrs. Belfrage & Carfrae, C.E., Edinburgh, at an estimated cost of 1,300*l.*

FOREIGN AND COLONIAL.

FRANCE.—The work of restoration is to be resumed shortly at the Château of St. Germain en Laye; it was commenced in 1862 under the direction of M. Millet as architect, who died in 1879, and was replaced by M. Daumet. The work was stopped in 1890, and the building has seriously suffered since then from want of attention. M. Millet, who was a learned artist, had endeavoured to restore the château to its condition as it was under Francis I. He preserved, certainly, the large tower of Charles V., but he destroyed the angle pavilions of Louis XIV., finished in 1680. The fine chapel of St. Louis, older than the Sainte Chapelle

at Paris, and remarkable for the disposition of its square windows, was restored during the period from 1868 to 1877, and M. Millet has found and restored the design of the rose-window, which had been bricked up at the time when the château was used at once as a prison and barrack.——The Chamber of Deputies has voted the necessary credit for the restoration of the Theatre of Orange.——The first railway at Tonkin has been opened. The line, which is 100 kilomètres in length, is both strategic and commercial in its objects.——An international artistic and industrial exhibition is to be held at Toulouse from May to October.——A local railway line has been opened between Autun and Château Chinon.——The cost of improving the port of Havre, for which funds have been voted by Parliament, is estimated at 42,500,000 francs.——At the cemetery at Narbonne some workmen have found a fine mosaic of the Gallo Roman epoch, about 26 square mètres in extent. The designs are formed entirely in white and black cubes.——The death is announced of M. Georges Guilhem, member of the Société Centrale des Architectes, at the age of forty-seven. He studied originally at the École des Arts et Métiers at Angers, and subsequently entered the École des Beaux-Arts at Paris, in the atelier of M. Laisné. He carried out numerous works, both at home and abroad, and had been commissioned to carry out the Hôtel des Postes at Périgueux. his native town.

GERMANY.—Messrs Siemens & Halske have applied for a concession for the extension of the Berlin Overhead Electric Railway, now in course of construction, in view of the 1896 Exhibition. The proposed line is to run from the Schlesischer Thor to Treptow Park.——The project for the Suspended Railway, on Langen's system, has been abandoned, principally owing to the impossibility of connecting the proposed line with the existing systems.——According to a statement by the Secretary of State in the Budget debate, the opening of the Baltic and North Sea Canal will take place towards the end of June next. An international assemblage of warships is contemplated.——Important innovations have been made at the Royal Museum for casts from classical works at Munich, under the direction of Professor D. Furtwängler. The library of the Archæological College has been incorporated in the museum, and a new apparatus installed for the projection of magnified images of works of art, which is said to be a very useful adjunct to lectures.——The city of Strasburg has handed over the museum, the fourth largest in Europe, to the University authorities, who will receive nearly 1,000*l.* annually for the management of the collections. The city has, moreover, voted 15,000*l.* towards a new building.——The marble bust of Ernst Curtius, set up, in commemoration of his eightieth birthday, at Olympia, in Greece, will be unveiled next April.

MISCELLANEOUS.

AN ANCIENT FAMILY SEAT FOR SALE.—Lord Poulett is offering for sale his estate at Hinton St. George, near Crewkerne, a property which was held during the reigns of Richard I. and John, by the Powtrells. Having passed to the Denebands, it was brought in marriage by Elizabeth, daughter of John Deneband to Sir William Paulet, Knight, of Leigh-Paulet, Devonshire, descendant of Hercules, Lord of Tournon, Picardy, who came to England with Geoffrey, Earl of Anjou. Their son, Amyas, was knighted on the field at Newark-on-Trent, June 16, 1487; he committed to the stocks Wolsey when a schoolmaster at Limington, in this county; and afterwards became Treasurer of the Middle Temple, where he erected the gate-way, rebuilt by Wren. John Paulet, or Poulett, of the direct line, was elevated, 1627, Baron Poulett, of Hinton St. George; John, fourth Baron, was advanced Earl Poulett, *temp.* Queen Anne. Hinton House, famed for its fine collection of prints and pictures—including works by Rubens, Van Dyck, Murillo, Correggio, and Rembrandt, was built reputedly by the above-named Sir Amyas; it was altered and enlarged *circa* 1830, by the then Earl Poulett. Views will be found in J. P. Neale's "Seats," and vol. ii. of the Rev. John Collinson's "History of Somersetshire," 1791. Sir Amyas's grandson, *obiit* 1588, was the keeper, for a while, of Mary, Queen o' Scots. The first baron, and his son, were knighted on board of the *Mary Honor*, in 1635, and were zealous adherents of King Charles I.

DIOCESAN SURVEYORSHIP OF ST. ALBANS.—We are officially informed that Mr. F. Trevor Davys, of Wheathamstead, Herts, has been appointed Surveyor to the Diocese of St. Albans. A former statement in our columns, implying that the appointment had been conferred on another person, appears to have been incorrect, but we are not responsible for the error.

THE IMPERIAL PALACE AT BERLIN.—Our German contemporary, the *Deutache Bauzeitung*, describes the numerous alterations which have been made at the Berlin "Schloss," which serves as a town residence for the Emperor. William I. resided at a small palace in the thoroughfare Unter den Linden, using the reception-rooms of the Schloss for ceremonials only. The present Emperor's more pretentious Court, with its constant ceremonies, however, requires a proximity of the residence to the reception-halls, and the Chapel Royal, and some suites of apartments have hence been retained in the block for the Imperial Family and their *entourage*. The building, however, required some modernising, both in arrangement and decoration, and the builders have been constantly at work since the Emperor's accession. The most important improvement which is of interest to the general public is the remodelling of the historical "White Hall," which was last decorated by Professor Stuler in 1844. This time Herr Ihne, one of the Court architects, was commissioned with the rearrangement. This has been done by altering the grand staircase which leads to the hall, and adding a *foyer*, besides entirely altering the decoration by giving the hall an imposing columnar treatment. The hall measures 31 mètres by 16 mètres, at the narrow end of which is the staircase, 16 mètres by 11 mètres. The other narrow end and one of the long sides face thoroughfares. Along the second long side is the new *foyer*, which measures 43 mètres by 7 mètres.

TRADE DINNER.—Messrs. Vernall, Danes & Co., builders and contractors, 12, Albany-street, N.W., gave their anniversary dinner on the 16th ult. at the "Bedford Head" Hotel to about ninety of their *employés* and guests. At the suggestion of Mr. Hobbs, a collection was made for the unemployed.

MOORLAND CHURCHES.—On the 21st ult., at the Plymouth Athenæum, Mr. H. Worth, C.E., lectured on "Moorland Churches." His introductory remarks were devoted to a sketch of the growth of ecclesiastical architecture in England, and he briefly summarised the features of the Norman, Early English, Transitional, Decorated, and Perpendicular periods. A large number of photographic views were then thrown upon a sheet by means of an oxyhydrogen lantern, being for the most part illustrative of moorland church architecture. St. Mary Magdalen's Church, Taunton, was illustrated, being one of the finest specimens of a Perpendicular tower in existence; and a number of pictures of moorland churches, chiefly of the Perpendicular style, followed. One of the most interesting of moorland churches—that at Meavy—claimed a good deal of attention, and it was pointed out that traces existed here of a Norman building. The tower of Sheepstor was shown to be out of all proportion to the church; and that of Shaugh Church was said to be one of the best built towers on the moors. The churches of Cornwood and Walkhampton were hastily noticed, a feature of the capitals of these buildings being the superficiality of the mouldings. Referring to Buckland Monachorum Church, the lecturer observed that this structure was in an extremely unsatisfactory state, the enlargement and repairs having been very carelessly done. A brief discussion followed, during which the Chairman said connected with nearly all the moorland churches were priests' houses. The Perpendicular period was a great church building and restoring period all over England, and especially in Devon, Cornwall, and Somerset. He had no doubt that in years to come the Victorian era would be regarded as a great church-restoring era. In reply to a question, the lecturer said in many cases the remains of older religious houses are embodied in the present moorland churches.

NOTTINGHAM MASTER BUILDERS' ASSOCIATION.—Members of the Nottingham Master Builders' Association assembled on the 22nd ult. at the Lion Hotel, Clumber-street, on the occasion of the annual dinner of the Association. In the absence through indisposition of the President (Mr. Enoch Hind), the chair was occupied by Mr. George Fish. The Chairman proposed "Success to the Master Builders' Association," remarking that when he addressed them on the occasion of the last annual dinner he said they were desirous of establishing a uniform code of working hours. So far that had not been brought about, but he hoped that during Mr. Hind's tenure of office they would be able to accomplish it, so that all trades might commence work and finish at uniform hours. The financial condition of the Association, he was pleased to say, was very flourishing. They had gone to considerable trouble in working out a schedule of prices during the past year, and they were hoping that a deputation from the Association would shortly meet the architects in the town on that subject. There was no doubt that such a schedule of prices as had been compiled would prove of great benefit to the master builders of the Association. A deputation of the Association had met the Borough Engineer in regard to matters relating to drainage; and it was purposed to meet the Works and Ways Committee and the Engineer with respect to the by-laws of the town. Further than that, the Association had had before them several important matters bearing upon the building trade, and it behoved the members to hold together and to give every support to their President during the ensuing year. He was pleased to say that the greatest good feeling existed between the masters and workmen in the building trade in the town, and also between the masters, builders, and the local architects; and it seemed to him there was every prospect of success for the Association and the building trade. Mr. J. W. Woodsend responded. When he first became connected with the Association, he said, they experienced considerable difficulty in getting builders to join, but he was proud to say their membership was now something like fifty. Mr. James Wright proposed "The Town and Trade of Nottingham," remarking that though the builders had gone through a period of depression in trade, there were encouraging signs of an improvement in the near future. Mr. Woodsend responded, and said the Corporation had done very much to improve the town during the last thirty years.

PARTNERSHIP.—A partnership has been entered into between Mr. George Highton, F.R.I.B.A., Diocesan Surveyor of Bedford, and Mr. Arthur Ardron, F.R.I.B.A., of 39, Victoria-street, Westminster. The united practices will be carried on at No. 39, Victoria-street, Westminster, as Highton & Ardron, with a branch office at 5, the Crescent, Bedford.

BRADFORD BUILDING TRADES.—The members of the Bradford Building Trades' Exchange met at the New Inn, Bradford, on the 21st ult. Mr. E. Dyson, who presided, said that they met about two years ago to complain of the rates charged by the various railway companies for the conveyance of stone from Bradford to other places. At that time letters were sent to the Board of Trade and to each of the railway companies, who had replied that they would look into the matter, but nothing had as yet been done. Some of the members of the Exchange had refused to pay the extra charge, which, in some instances, had been enforced, while in others the members had been excused. The Secretary (Mr. A. Gadie) said that the general effect on the alteration had been an increase in the freight of 5 per cent. After discussion, it was resolved that traders forwarding stone by the various railway companies make out a list of rates from and to the various receiving stations, showing the old and new rates, and protest against paying any increased rates as the trade will not warrant an increase. It was also decided that each of the members should forward a similar memorial and notice of opposition to the Board of Trade.—*Bradford Argus.*

LEGAL.

DECISION UNDER THE LONDON BUILDING ACT, 1894.

ON the 12th ult., Mr. Arthur Crow, District Surveyor for Whitechapel, was summoned before Mr. Haden Corser, at the Thames Police Court, by Mr. Charles Watkins, of Ingram House, Fenchurch-street, surveyor and builder, to show cause why a "notice of objection," served by Mr. Crow under Sec. 150 of the London Building Act, 1894, should not be disallowed. Mr. T. Seager Berry, of the Solicitor's department, L.C.C., in opening the case for the District Surveyor, stated that the object of the section under which the notice of objection was served was to enable a magistrate's decision to be obtained on any question arising under the Act before the work was commenced, so as to avoid the inconvenience and loss which have often accrued in the past through the District Surveyor not being able to take proceedings until the work in question had been begun, and an offence actually committed. The facts in this case were simple, and not disputed. In November last two warehouses, Nos. 1 and 3, Church-street, Minories, were involved in a conflagration which destroyed several buildings in the neighbourhood. No. 3 was almost a total ruin, considerably more than half of the cube thereof being either burnt or pulled down. The damage to No. 1 was slight, but under a dangerous structure notice the party-wall between the two warehouses was pulled down to the extent of about one-third of its superficial area. On January 21 the District Surveyor received notice from the builder for the reinstatement of the party-wall. This notice referred only to the wall in question, which was therein styled the "party-wall" of No. 1, no notice having been received for the reinstatement of No. 3. Thereupon the District Surveyor served the builder with a notice of objection, on the ground that the lower portion of the party-wall—which he described as being situate between Nos. 1 and 3, Church-street—was of insufficient thickness, and constructed with improper mortar. It was urged in support of the notice of objection, that inasmuch as the wall in question was a party-wall, and thus formed part of No. 3 as well as No. 1, it must be made to comply with the new Act, for No. 3 having been burnt down or destroyed to the extent of more than half its cube, the reinstatement thereof would by Section 5, Subsection 6, be considered as the erection of a new building, and the walls must be made of the thickness required by the first schedule.

The facts having been briefly proved by the District Surveyor, and Mr. W. C. Young, Public Analyst for Whitechapel, who stated that the mortar originally contained only one part of lime to $7\frac{3}{4}$ of broken brick, sand, and dirt, Mr. Morris, on behalf of Mr. Watkins, contended that Sec. 208, which deals with party-walls, only requires the remaining portion of any party-wall to be made in conformity with the Act if more than half of its superficial area has been taken down, burnt, or destroyed, which was admitted not to be the case with the wall in question, and that, therefore, it was competent for his client to reinstate the wall under the old Act.

Mr. Berry, in reply, contended that Sec. 208 only purported to govern a party or external wall *per se*, and did not affect the obligation imposed on the

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Infectious Diseases Hospital	Penzance Town Coun.	31*l.* 10*s.* 21*l.* and 15*l.* 15*s.*	Mar. 19
*Cottage Homes and Schools	Chorlton Union	75*l.* 50*l.* and 25*l.*	April 20
*Shops, Offices, Two Hotels, &c. Preston	N. Miller	150*l.* 100*l.* and 50*l.*	May 27

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Additions, &c. to Workhouse, Stratton St. Margaret, Wilts	Highworth & Swindon Union	W. H. Read	Mar. 5
Pipe Sewers, &c. North Forest-road	Aberdeen Town Coun.	G. T. Lynam	do.
Villa, Bermochy-terrace, Kirkcaldy, N.B.	Thos. Johnston	W. Birrell	do.
School Enlargement, Moorland-road	Cardiff School Board	Habershon & Fawckner	do.
Additions to Workhouse, Longtown, Cumberland	.....	R. Maxwell	do.
Wesleyan Chapel, Middleton, near Leeds	.....	Messrs. Howdill	do.
Grand Stand on Racecourse, Ipswich	.....	J. C. Pells	do.
Goods' Yards, Buildings, &c. Pylehill, Bristol	G. W. R. Co.	*Official*	do.
*Granite Cubes	Battersea Vestry	do.	do.
Public Hall, Amorum, N.B.	J. H. Russell	.....	Mar. 6
Setts, Kerbs, Flags, &c.	Middleton (Lancs) Corp.	W. Welburn	do.
Pipe Sewers	Rawmarsh U.D.C.	J. Platts	do.
Additions to "Derwent Hill," near Ebchester, Durham	.....	J. W. Rounthwaite	do.
Rebuilding Church Tower, Farsley, Yorks	.....	T. H. & F. Healey	do.
Syenite Road Metal (6,000 tons)	Swansea Corporation	Geo. Bell	Mar. 7
Pair of Houses, Christon Bank	J. & G. Young	G. Reavell	do.
Rebuilding Wing of Workhouse	South Molton (Devon) Union	A. Thorne	do.
Public Mortuary, Lagan Bank-road	Belfast Corporation	*Official*	do.
Stores, Offices, &c. Belper and Wall-streets	Daisyfield (Lancs.) Co-operative Society	do.	Mar. 8
Concreting Footway (10,500 yds.), &c.	Great Yarmouth U.S.A.	J. W. Cockrill	do.
Chapel and School, Mevagissey, Cornwall	Rev. W. H. Webber	F. C. Jury	do.
Rebuilding Premises, Finkle-street, Kendal	Mr. Reiss	Stephen Shaw	do.
*Painting, Repairs, &c. at Workhouse	St. George-in-the-East Guardians	Wilson, Son, & Aldwinckle	do.
*Sewage Works	Bacup Corporation	G. Wilson	Mar. 9
Stoneware Pipes	St. Austell (Cornwall) U.D.C.	Jno. Samble	do.
Road Materials, Kerbing, &c.	Colchester Corp.	H. Goodyear	do.
Sewers, East Ardsley and Dirtcar	Wakefield R.D.C.	F. Massie	do.
Draining, Levelling, &c. Sandfield-terrace	Guildford Corp.	F. T. Maltby	do.
Station Hotel, Fort William, N.B.	.....	Dun. Cameron	do.
Additions to School, Borrowdale, Cumberland	Rev. A. J. Heelis	.....	do.
Schools, Eve Hill	Dudley School Board	R. F. Matthews	do.
Mill Premises, Bruntcliffe-lane, Morley, Yorks.	B. P. Hepworth	T. A. Buttery	do.
Pavement (14,000 sq. yds)	Peebles (N.B.) Com.	*Official*	do.
Pier Works, Morecambe, Lancs.	Pier Co.	Mangnall & Littlewood	Mar. 11
Service Tank, Pipe Laying, &c.	Neath R.D.C.	W. E. C. Thomas	do.
Drainage Works	Ulverston R.D.C.	J. Greenwood	do.
Granite Setts, Kerbs, &c.	Birmingham Corp.	W. S. Till	do.
Schools, Llwynypia, Glam.	Ystradyfodwg Sch. Bd.	J. Rees	do.
Four Houses, Hebden Bridge	.....	W. H. Cockcroft	do.
*Steam Crane, Weighing-Machine, &c.	Boro' of West Ham	L. Angell	Mar. 12
Making-up Coach-road, &c.	Bedlington U.D.C.	*Official*	do.
*Works and Materials	Tottenham U.D.C.	do.	do.
*Erection of Wall and Railings, &c.	St. Luke's (Middlesex) Vestry	do.	Mar. 13

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Works and Materials	Hackney Vestry	J. Lovegrove	do.
Additions to Schools, Hickling, Notts.	Jno. Parr	.....	do.
Two Houses, Mytholmroyd, Yorks.	.....	W. H. Cockcroft	do.
House, Newton Heath, Lancs.	L. & Y. Ry. Co.	M. Shelmerdine	do.
*Schools, Lower Dovercourt	Harwich School Board	J. W. Start	Mar. 14
*Repairing and Police Stations	Metropolitan Police Receiver	*Official*	Mar. 15
Additions to National Schools, Clayton, Yorks.	.....	S. Spencer	Mar. 16
Twelve Houses and Store, Albert-road, Beech, Yorks.	Sowerby Bridge Indus. Soc. Ltd.	M. Hall	Mar. 18
Additions, &c. to Asylum, Downpatrick	Lunacy (Ireland) Commissioners	*Official*	do.
*Alteration to Fire Station	London County Council	do.	Mar. 19
Hotel, Fleetwood, Lancs.	.....	T. A. Drummond & Sons	do.
Fire-Station, Engine-House, &c. Rochdale-road	Bury (Lancs.) Corp.	J. Cartwright	Mar. 20
Rebuilding Shops and Premises, High East-street, Dorchester	.....	Arthur Tilley	Mar. 22
*Sanatorium Buildings	Southend-on-Sea Corp.	W. Y. Hobbiss	do.
Flags (800 yards), Bamber Bridge, Lancs.	Walton-le-Dale U.D.C.	*Official*	Mar. 23
*Works and Materials	Lewisham Bd. of W.	do.	Mar. 25
*Chancel and Organ Chamber, Blandford Church	.....	C. Hunt	Mar. 26
School Extension, Blackburn	.....	Stones & Gradwell	Mar. 29
*Synagogue, Cardiff	.....	D. Joseph	No date
School	Bosham (Sussex) Sch. Board	J. W. L. Cooper	do.
Broken Granite, Castle Station, Northampton	Hardingstone U.D.C.	J. Ingman	do.
Hartshill Macadam (2,600 tons)	Abingdon Highway Bd.	C. Tame	do.
Five Houses, Wellington-street, New Whittington, Chesterfield	Mr. Mellor	.....	do.
Two Semi-detached Houses, Nottingham-road, New Basford, Notts.	.....	A. H. Goodall	do.
Roebuck Hotel and other Buildings, Haslingden, Lancs.	Jno. Kenyon	Chas. Parsons	do.
Two Villas, Richmond-street, Ashton-under-Lyne	J. Farrow	George & Son	do.
Six Houses, Bangor, Ireland	.....	H. T. Fulton	do.
Two Houses, Ben Rhydding, Yorks.	.....	E. Critchley	do.
Shops and Offices, King street and Longrow, Nottingham	H. Butler	Marshall & Turner	do.
*Shops at Brockley	.....	.....	do.
*Building Materials and Tools	Prison Department	*Official*	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Highway Surveyor	Amersham R.D.C.	160*l.*	Mar. 4
Surveyor, &c. Romsey, Hants	Stockbridge R.D. and School Committee	140*l.*	Mar. 5
*Surveyor and Inspector of Nuisances	Perry Barr R.D.C.	120*l.*	do.
*Highway Surveyor	Epping R.D.C.	300*l.*	Mar. 6
*Surveyor	Rochford R.D.C.	150*l.*	Mar. 8
*Clerk of Works	Com. of Public Baths, &c. Hackney	4*l.* 4*s.*	do.
*District Superintendent of Main Drainage Works	London County Council	200*l.*	Mar. 11
*Drainage Inspector	Manchester Corp.	2*l.* 5*s.*	Mar. 13

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., viii., *and* xxiii. *Public Appointments, p.* xxi.

builder by virtue of the definition in Sec. 5, Subsection 6, that it might often be the case that one wall of a building became somewhat defective through accident or decay, while the remainder of the building was not affected, and in such a case it need not be rebuilt in accordance with the new Act, provided more than half were not destroyed. If such had been the case in the present instance the right to reinstate the wall would not be questioned. The case now before his worship differed materially. The building No. 3, of which this wall formed a part, was almost completely destroyed, and in the rebuilding thereof every part, including this party-wall, must be made to conform with the requirements of the Act.

His Worship, after adjourning the case for consideration, gave the following judgment. He found that the wall in question was a party-wall, but having regard to the fact that No. 3 had been destroyed to more than half its cube, it could only be looked upon as forming part of No. 1. The notice of objection was therefore wrong so far as it referred to the wall as forming part of No. 3. Section 208 dealt with the reinstatement of party-walls, which have been taken down, burnt, or destroyed to the extent of one-half thereof, and in such cases the remainder must be made to comply with the Act. Inasmuch as half of the wall referred to had not been taken down, burnt, or destroyed, that section could not be held to apply. Further, when an Act of Parliament deals with any special case by a particular section which governs such case, then if such section does not apply, the Act itself does not apply. The question of the quality of the mortar had been raised, but this could only be regarded as a warning to the builder to use better mortar, for as the wall had been built some years, the decision of the Queen's Bench in the case of Smith *v.* Legg prevented any action being taken as regarded the mortar. The notice of objection served by the District Surveyor must therefore be disallowed.

Mr. Berry asked his Worship whether, in view of Section 209, he decided that this was a work which did not affect the construction of a party-wall, and was therefore exempt from that section.

Mr. Haden Corser replied that it was certainly a work which affected the construction of a party-wall, but inasmuch as Section 208 did not apply, and in consequence the whole Act did not apply, by parity of reasoning Section 209 would not apply. His Worship said he would state a special case for the opinion of the Queen's Bench, if desired.

Notice of appeal was given.

CAPITAL AND LABOUR.

WORKSOP BUILDING TRADE.—As a result of a movement instituted a short time ago in Worksop, the master builders have met the bricklayers, carpenters, and joiners employed in the trade, with the object of adopting rules to regulate time and wages. An agreement was signed to observe a uniform rate of 7d. per hour for carpenters and joiners, with one penny per hour additional for overtime. Work will in future cease at twelve noon on Saturdays.

MEETINGS.

FRIDAY, MARCH 1.

Architectural Association.—(1) Mr. T. Stirling Lee on "The Use of Sculptural Decoration at the Present Time." (2) Mr. T. W. Pomeroy on "Plaster Work." 7.30 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—Professor A. Wynter Blyth on "The Law Relating to the Supervision of Food Supply." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Belmont Works of Price's Patent Candle Company, Battersea. 2.30 p.m.

SATURDAY, MARCH 2.

London and Provincial Builders' Foremen's Association.—Monthly meeting, Memorial Hall, Farringdon-road, E.C. 8 p.m.

Sanitary Inspectors' Association.—Mr. W. Wilkinson on "The Position of a Sanitary Inspector." 6 p.m.

Edinburgh Architectural Association.—Visit to Royal Observatory, Blackford Hill.

Queen's College, Cork. — Mr. Arthur Hill on the "History of Architecture." XIII. 3 p.m.

MONDAY, MARCH 4.

Architectural Association Camera Club.—Mr. Arnold Mitchell on "Vaulting." 8 p.m.

Surveyors' Institution.—Adjourned discussion on Mr. Arthur C. Pain's paper on "Light Railways." 8 p.m.

Royal Academy.—Mr. W. B. Richmond, A.R.A., on "The Evolution of Sculpture." II. 8 p.m.

Society of Engineers.—Messrs. W. W. Beaumont and Stephen Sellon on "Parliamentary Procedure as affecting Light Railways and Tramways." 7.30 p.m.

Architectural Section, Glasgow Philosophical Society.—Sir William Arrol on "Iron Construction in Modern Buildings." 8 p.m.

TUESDAY, MARCH 5.

Institution of Civil Engineers.—(1) Mr. Robert Robertson on "Electrical Haulage at Earnock Colliery." (2) Mr. Robert Hay on "Water-power Applied by Electricity to Gold-Dredging." 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—Professor A. Wynter Blyth on "Sanitary Laws and Regulations Governing the Metropolis." 8 p.m.

Society of Biblical Archæology.—8 p.m.

Glasgow Architectural Association.—Annual Business Meeting. 8 p.m.

WEDNESDAY, MARCH 6.

Royal Archæological Institute of Great Britain and Ireland.—"Notes on Huntington Shaw, Blacksmith, His Reputed Work, His Tomb formerly at Hampton, Middlesex, and Ironwork from the Railing of the same," by Mr. R. Garraway Rice, F.S.A. 4 p.m.

British Archæological Association.(1)—Rev. J. Cave Browne, M.A., on "The Church and Manor of Offham, Kent" (2) Dr. Russell Forbes on "The Gates of Sta. Sabina, Rome." 8 p.m.

Carpenters' Company (Free Lectures on Matters Connected with Building).—Professor T. Roger Smith on "Oriental Architecture," with lantern illustrations of Indian and other buildings. 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—Inspection and demonstration of dis-

infecting apparatus and model steam laundry, St. John's Wharf, Fulham.

Edinburgh Architectural Association.—Mr. A. Hunter Crawford on "The Surburban House." 8 p.m.

Liverpool Engineering Society.—8 p.m.

Carlisle Architectural, Engineering, and Surveying Association.—Mr. F. W. Moseley on "Specifications and Quantities." 8 p.m.

THURSDAY, MARCH 7.

Royal Academy.—Mr. W. B. Richmond, A.R.A., on "The Evolution of Sculpture." III. 8 p.m.

Society of Antiquaries.—8.30 p.m.

FRIDAY, MARCH 8.

Institution of Civil Engineers.—Mr. A. Struben on "The Co-ordinate System of Surveying as Employed in South Africa." 8 p.m.

Royal Institution.—Professor A. W. Rücker, M.A., F.R.S., on "The Physical Work of von Helmholtz." 9 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—Dr. J. F. J. Sykes on "Objects and Methods of Inspection." 8 p.m.

SATURDAY, MARCH 9.

Architectural Association.—Visit to the Brompton Oratory. 3 p.m. (See advt.)

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—Inspection and Demonstration of Friern Barnet Sewage Works.

Queen's College, Cork.—Mr. Arthur Hill on "The History of Architecture." XIV. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

1,860.—SASH FASTENERS: *G. H. Kirk.*—For automatically fastening windows a round bolt actuated by a spring encircling it is enclosed in a metal barrel fastened on the bottom meeting-rail of sash. On closing the sash the end of the bolt passes over an inclined surface until it comes to a hole in the catch, where it is forced through by the spring.

2,068.—LADDERS: *E. Smith.*—This ladder may be used as an ordinary step-ladder with stays or rests, or extended to double the length. This is done by making the stay with round staves and hanging it at the top in such a way that the legs may be straightened out and form one long ladder. Suitable fastenings are provided to keep the arrangement taut when extended.

3,332.—LEAD-PIPE JOINTS: *R. Holt.*—An improvement for soldering joints of lead-pipes, consisting of a narrow ferrule or ring of tinned metal placed over the outside of the joint, made in various shapes, and combined with the solder in the ordinary way.

5,091.—WATER-TAP: *T. Aston and another.*—To obviate waste of water caused by wear of valve. A metal valve is substituted in place of the ordinary india-rubber or lock valve. The tap consists of a horizontal-cylindrical barrel, one end of which forms the ingress passage, a bent tube at the side forms the egress passage. The metal valve, which has a bevelled edge, is forced into position by a screwed plug from the handle.

5,290.—VENTILATING APPLIANCES: *J. Catt.*—This method of ventilating is chiefly for drains and sewers, but is also suitable for houses, &c. For chimneys: a cowl is formed from a series of truncated cones, with a central passage through which the air is directed, a blade screw in the passage materially assisting the action. For drains: a revolving cowl is fastened to a central spindle, which is supported in a cup-shaped bearing at the end of the ventilating pipe. By means of a flap, the face of the cowl is kept to the wind, so that air may be blown in.

24,504.—TILES: *W. Jaeger.*—To prevent rain from penetrating between any two adjacent tiles. For effecting this, longitudinal ribs and tongues are made on the tiles and fit into corresponding grooves.

NEW APPLICATIONS FOR LETTERS PATENT.

FEBRUARY 11.—2,942, G. Gedrey and others, Window-sashes and Window-frames and Fittings.—2,949, J. Irving, Lobster-back Chimney-Cowls.—2,958, J. Brider and G. Conchie, Sliding Window-sashes and Frames.—2,977, H. Ehrhardt, Circular Saws.—2,984, T. Wallas, Flooring, Ceiling, and Panelling Boards.

FEBRUARY 12.—3,015, W. Conrad, Preventing Water-pipes from Bursting in Frosty Weather.—3,016, R. Grocott, Securing Door-knobs to Spindles.—3,054, R. Walker, Construction of Concrete Walls.—3,071, H. Worsey, Door-latches and Latches for Door-locks.

FEBRUARY 13.—3,114, J. Cuttler, Securing Window or Sash-cords to Window-sheets.—3,143, W. Crompton, Carpenters' Plane.—3,177, W. Christian, Window-sash and like Fastenings.—3,189. J. Curtin, Ventilation Apparatus.—3,192, F. Cooke, Disinfecting Water-closets, &c.

FEBRUARY 14.—3,229, W. Fraser and G. Boadley, Ventilation of Channels, Culverts, Subways, &c.—3,230, J. Duke, Syphons and Ball-valves employed in Syphon Cisterns for Water-closets, &c.—3,234, A. White, Door-knobs.

FEBRUARY 15.—3,296, W. Phillips, Sash-windows.—3,313, T. Winfield, Device to be used for Circular Saws.—3,314, L. Symonds, Grates.

FEBRUARY 16.—3,375, W. Whitley, Planing, Cutting, or Shaping Strips of Wood.—3,402, M. Donne and C. Mathias, Hinges.—3,403, R. Morgan, Hinges.—3,423, W. Gardner, Water-pipes.—3,430, R. Lanham, Window-sashes.

PROVISIONAL SPECIFICATIONS ACCEPTED.

279, W. Ward & Sons, Limited, and W. Ward, Tile-making Machines.—1,302, R. Warwick, Slabs or Panels formed of Fibrous Plaster, &c.—1,450, G. Wallis and J. Gibson, Draught-excluder.—1,464, H. Sampson, Draught-excluder.—1,588, F. Whitehouse, Ratchet Braces.—1,712, J. Gamble, Adjusting and Fastening Door-handles upon their Spindles.—1,713, B. Mills, Combined Spring-hinges and Door-checks.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.

6,563, G. Couch, Window-frames, with Sliding-sashes and Fittings therefor.—263, G. Goller, Chisels for Working Wood.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

FEBRUARY 18.—By *Elliott, Son, & Boyton:* 85, Wimpole-st., Cavendish-sq., u.t. 28 yrs., g.r. 50*l.*, rising to 75*l.*, 2,200*l.*—By *Carey & Lewis:* 205, Upland-rd., Dulwich, and 1, Crebor-rd., u.t. 74 yrs., g.r. 7*l.*, 380*l.*; 24, Gowlett-rd., u.t. 73 yrs., g.r. 7*l.*, r. 27*l.*, 200*l.*; 31, Rust-sq., Camberwell, u.t. 63 yrs., g.r. 6*l.* 8s., r. 39*l.*, 190*l.*—By *R. A. Notley:* 31, St. John's Wood Pk., St. John's Wood, u.t. 48 yrs., g.r. 20*l.*, r. 100*l.*, 800*l.*—By *J. H. Bethell:* 1, 2, 6, 7, 8, and 9, Holmes Cottages, East Ham, f., 575*l.*; 103, 105, and 107, St. Stephen's-rd., Upton Pk., f., r. 81*l.* 18s., 780*l.*

FEBRUARY 19.—By *W. Holcombe & Betts:* 12 and 14, Charles-st., Hatton Garden, seven houses in Abercrombie-pl., and the "Sir Ralph Abercrombie" public-house, f., area 5,370 ft., 5,140*l.*; 27 and 29, Clarendon-rd., Notting Hill, f., r. 115*l.*, 1,370*l.*; f.g.r. of 16*l.*, Portland-rd., reversion in 56 yrs., 425*l.*—By *Martin, Clarke, & Co.:* 3, Cobbold-rd., Shepherd's Bush, f., r. 34*l.*, 275*l.*

FEBRUARY 20.—By *Wagstaff & Warman:* 44, Mildmay-pk., Islington, f., 950*l.*—By *Messrs. Adridges:* 33, Penge-rd., Norwood, u.t. 72 yrs., g.r. 8*l.*, 105*l.*

FEBRUARY 21.—By *Newbon & Co.:* F.g.r. of 26*l.*, Heath-rd., Hounslow, reversion in 62 yrs., 580*l.*; i.g r. of 140*l.*, Caledonian-rd., u.t. 52 yrs., g.r. 15*l.*, 2,550*l.*; i.g.r. of 19*l.*, Blundell-st., u.t. 52 yrs., g.r. 3*l.*, 330*l.*; i.g.r. of 50*l.*, Sutterton-st., u.t. 52 yrs., g.r. 1*l.*, 880*l.*; f.g.r. of 6*l.*, Ball's Pond-rd., Islington, reversion in 8¾ yrs., 380*l.*; f.g.r. of 5*l.*, Hanley-rd., Hornsey, reversion in 11 yrs., 435*l.*; f.g.r. of 44*l.*, Gillespie-rd., Highbury, reversion in 81 yrs., 1,255*l.*; f.g.r. of 6*l.*, Durham-rd., Holloway, reversion in 47 yrs., 160*l.*; f.g.r. of 16*l.*, Stalham-st., Paddington, reversion in 63 yrs., 420*l.*; f.g.r. of 20*l.*, Lower Addiscombe-rd., Croydon, reversion in 68 yrs., 555*l.*; f.g.r. of 5*l.*, Denmark-st., Camberwell, reversion in 72 yrs., 130*l.*; f.g.r. of 10*l.* 10s., Commercial-rd., Peckham, reversion in 50 yrs., 285*l.*; f.g.r. of 8*l.*, Commercial-rd., reversion in 56 yrs., 210*l.*; f.g.r. of 9*l.*, Stanton-st., reversion in 52 yrs., 250*l.*—By *Maddox, Son, & Green:* F. site about 2,000 sq. ft., Church-st., Chelsea, 255*l.*—By *D. Watney & Sons:* 37, Blackfriars-rd., Blackfriars, f., 1,000*l.*; "The Crown and Sceptre" public-house, Shad Thames, Southwark, f., r. 65*l.*, 1,500*l.*—By *H. J. Bliss & Son:* F.g.r. of 11*l.* 5s., Spencer-rd., Hornsey, u.t. 81 yrs., 255*l.*; F.g.r. of 26*l.*, Durham-rd., Finchley, reversion in 91 yrs., 660*l.*; a plot of f. land, Alexandra-pk.-rd., Wood Green, 26*l.*; 249, Queen's-rd., Peckham, u.t. 70 yrs., g.r. 6*l.*, 360*l.*; F.g.r. of 9*l.* 15s., Kimpton-rd., Camberwell, reversion in 57 yrs., 230*l.*; 23, Fullerton-rd., Croydon, f., r. 12*l.*, 95*l.*; 230, Victoria-pk.-rd., Hackney, u.t. 59 yrs., g.r. 6*l.* 19s., 360*l.*—By *Chesterton & Sons:* 3, Portland-rd., Notting Hill, u.t. 66 yrs., g.r. 10*l.*, 400*l.*—By *A. J. Sheffield:* 8, Ellerthorpe-st., Poplar, u.t. 47 yrs., g.r. 3*l.* 3s., r. 26*l.*, 145*l.*; 17, Tetley-st., Bromley-by-Bow, f., r. 20*l.* 16s., 170*l.*; 4, Gernon-rd., Old Ford, u.t. 44 yrs., g.r. 6*l.*, r. 36*l.* 8s., 225*l.*; 134, Devon's-rd., Bromley-by-Bow, f., r. 31*l.* 4s., 300*l.*; 18, 19, and 20, Orchard-pl., Blackwall; 1 to 6, West-st.; 7, 8, and 9, Creek Side, u.t. 11 yrs., g.r. 14*l.*, 300*l.*

FEBRUARY 22.—By *Robt. Reid:* 1 to 31 odd, Marlborough-rd., Chelsea; 30 and 32, Norman-st.; 131 to 137 odd, Kepple-st.; 1 to 14, Cumberland-pl., u.t. 13 yrs., g.r. 30*l.*, and as to 18-60ths for a further term of 1 yr., g.r. 9*l.*, 5,850*l.*; F.g.r. of 78*l.*, Pembridge-rd., Notting Hill, reversion in 57 yrs., 2,450*l.*—By *Belton & Sons:* 8 and 9, Cottage Grove, Clapham, u.t. 51 yrs., g.r. 8*l.*, r. 57*l.*, 45., 410*l.*; 16, Lower Belgrave-st., Pimlico, u.t. 17 yrs., g.r. 5*l.* 5s., r. 110*l.* (one-third share), 410*l.*—By *E. Owers:* 18 nd 20, Dryden's-rd., Croydon, u.t. 88 yrs., g.r. 9*l.*, 145*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a, for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Sequola, U.S.	ft.cu	1/10 2/2
Ash, Canada	load	3/0/0 4/5/0
Birch, do.		3/0/0 4/5/0
Elm, do.		3/15/0 5/0/0
Fir, Dantsic, &c.		1/10/0 3/5/0
Oak, do.		2/15/0 4/15/0
Canada		5/5/0 6/15/0
Pine, Canada red		2/15/0 3/5/0
Do. Yellow		3/10/0 5/15/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/15/0 5/0/0
Odessa, crown		2/15/0 5/0/0
Deals, Finland		
2nd & 1st std	too	7/0/0 0/0/0
Do. 4th & 3rd		7/0/0 8/0/0
Do. Riga		7/0/0 8/10/0
St. Petersburg, 1st yellow		9/10/0 12/0/0
Do. 2nd yellow		7/10/0 9/0/0
Do. white		8/0/0 9/10/0
Swedish		7/0/0 15/10/0
White Sea		7/10/0 15/0/0
Canada, Pine 1st		21/0/0 24/10/0
Do. do. 2nd		16/10/0 17/10/0
Do. do. 3rd, &c.		8/0/0 10/10/0
Do. Spruce, 1st		8/10/0 10/0/0
Do. do. 3rd and 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/0/0
Battens, all kinds		5/0/0 21/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/0
Do. 2nd		0/7/0 0/11/6
Other qualities—		0/5/0 0/7/0
Cedar, Cuba	ft.	/3 /4
Honduras, &c.		/3 /4½
Mahogany, Cuba		/3½ /6
St. Domingo, cargo av.		/3½ 1/6
Mexican do. do.		/3 /4
Tobasco do. do.		/3½ /6
Honduras do.		/3½ /5½
Box, Turkey	ton	4/0/0 15/0/0
Rose, Rio		7/0/0 16/0/0
Bahia		6/0/0 15/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER (*continued*).		
Satin, Porto Rico	c/0/6	0/1/6
Walnut, Italian	0/0/3½	0/0/7

METALS.		
Iron—Pig, in Scotland	ton	2/1/4 0/0/0
Bar, Welsh, in London		5/12/6 5/15/0
Do. do. at works in Wales		5/2/6 5/5/0
Do. Staffordshire, in London		6/0/0 6/10/0
COPPER—British cake and ingot		42/0/0 42/5/0
Best selected		42/10/0 43/0/0
Sheets, strong		50/0/0 0/0/0
Chili bars		39/0/0 39/5/0
YELLOW METAL	lb	0/0/4½ 0/0/4½
LEAD—Pig, Spanish	ton	9/10/0 9/11/3
English com. brands		9/12/6 9/15/0
Sheet, English, 6 lbs. per sq. ft. and upwards		10/15/0 11/0/0
Pipe		11/15/0 0/0/0
ZINC—English sheet	ton	18/10/0 19/0/0
Vieille Montagne		19/10/0 0/0/0
TIN—Straits		59/5/0 59/15/0
Australian		59/10/0 60/0/0
English Ingots		64/10/0 65/0/0
Banca		61/10/0 62/0/0
Billiton		60/10/0 61/0/0

OILS.		
Linseed	ton	20/5/0 20/12/6
Cocoanut, Cochin		25/0/0 0/0/0
Do. Ceylon		22/15/0 23/0/0
Palm, Lagos		23/0/0 23/10/0
Rapeseed, English pale		21/15/0 22/0/0
Do. brown		20/5/0 20/10/0
Cottonseed ref.		17/5/0 18/5/0
Oleine		19/10/0 22/10/0
Lubricating, U.S.		4/0/0 5/0/0
Do. refined		5/0/0 12/0/0
TAR—Stockholm	barrel	1/1/0 1/1/6
Archangel		0/15/0 0/16/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

BOURNEMOUTH.—For the erection of a mission chapel in the Holdenhurst-road, in connexion with St. Clement's Church. Messrs. Dancaster & Taylor, architects, Boscombe, Bournemouth:—

	Building.	Boundary-wall and iron-railing, &c.
Walden Bros.	£1,247	£156
Robt. Davis	1,125	no tender
Head & Son, Boscombe, accepted	1,070	80

BRISTOL.—For alterations and enlargement of the Capital and Counties Bank. Mr. Rd. Milverton Drake, architect:—

	Bill No. 1. Belgian Granite.	Bill No. 2. Cornish Granite.	Bill No. 3. Bath Stone.
	£	£ s. d.	£
J. Bastow	7,043	6,990 0 0	6,095
W. Veals	7,000	6,910 0 0	5,910
Hatherly & Carr	6,697	6,597 0 0	5,597
W. Cowlin & Son	6,673	6,643 0 0	5,773
W. Church	6,550	6,473 0 0	5,494
R. Wilkins & Sons	6,549	6,454 0 0	5,394
E. Walters	6,300	6,244 0 0	5,361
H. A. Forse	6,000	5,885 0 0	4,900
G. Humphreys	5,995	5,891 0 0	4,856
H. J. Rossiter	5,889	5,752 0 0	4,797
C. A. Hayes*	5,700	5,515 9 7	4,649

* Accepted, exclusive of £1,000 for fittings and heating.

BRYNMAWR (Brecon).—Accepted (conditionally) for alterations, &c., to school buildings, erection of house, &c., at Gilwern, for the Llanelly School Board. Mr. E. A. Johnson, architect, Abergavenny:—

John Jenkins, Brynmawr £2,109 16

CARDIFF.—For offices, stables, boundary walls, &c., at the County Brewery, Cardiff. Messrs. J. P. Jones, Richards, & Budgen, and Charles C. Jones, joint architects, Cardiff:—

D. J. Davies	£6,400 0 0	Henry Davies	£5,793 17 0
D. Jenkins	6,390 0 9	David Davies	5,715 0 0
Stephens, Bastow & Co., Limited	6,300 0 0	F. S. Lock	5,700 0 0
E. F. Richards & Co.	6,022 0 0	E. R. Evans & Bros.	5,632 18 7
S. Shepton & Son	6,021 0 0	Fred J. Robbins	5,500 0 0
Hatherly & Carr	5,987 0 0	Hy. Gibbon	5,500 0 0
H. Willcocks & Co.	5,985 0 0	Knox & Wells	5,497 0 0
Rees & Thomas	5,970 0 0	Joseph Thomas	5,350 0 0
James Allan	5,907 8 0	Lattey & Co.	5,333 0 0
George Griffiths	5,850 0 0	E. Turner & Sons, Cardiff (accepted)	5,288 0 0
William Lissaman	5,840 0 0		

[Architect's estimate, £5,380.]

CARLISLE.—Accepted for new business premises, English-street, for Mr. W. D. Todd. Mr. H. Higginson, architect, Carlisle. Quantities by the architect:—

Building.—Jas. Beaty	£320 0 0
Joinery.—J. H. Reed	380 0 0
Plastering.—S. Ferguson & Sons	97 0 0
Plumbing.—Jos. W. Smith	47 4 6
Slating.—C. J. Nanson	43 0 0
Painting.—Jos. Denard	54 9 6
Total	£941 14 0

ELGIN (N.B.).—Accepted for the erection of a warehouse at Glengrant Distillery, Rothes. Mr. Chas. C. Doig, architect, Elgin, N.B.:—

Building.—David Roy, Ardeaning, Rothes	£539 0 0
Carpentry.—J. & A. Robb, Rothes	752 0 0
Slating.—George Ogilvie, Elgin	195 0 0
Plumbing.—John Gordon & Son, Elgin	57 0 0
Ironwork.—P. & W. McLellan, Ltd., Clutha Iron Works, Glasgow	343 0 11

KELTY (N.B.).—Accepted for the erection of business premises, Oakfield. Mr. John Houston, architect, St. Margaret's-street, Dunfermline:—

Building.—John Miller & Son, Cowdenheath	£790 0 0
Joinery.—Alex. Campbell, Kelty	692 0 0
Plumbing.—Wm. Binning & Son, Cowdenheath	73 0 0
Plastering.—Charles Nisbet, Kelty	189 7 9
Slating.—John Paul & Son, Cowdenheath	122 0 0
Ironwork.—Wm. McLeod, Dunfermline	19 10 0

KENCHESTER (Hereford).—For the proposed alterations and additions to the schools, for the Trustees of Lady Southampton's Charity. Mr. G. H. Godsell, architect, Hereford:—

W. P. Lewis & Co.	£375	R. Andrews & Son*	£340
R. Taylor	345		

* Accepted.

LARKHALL.—Accepted for building the Larkhall Academy, Lanarkshire, for the Larkhall School Board. Mr. John B. Wilson, architect, 112, Bath-street, Glasgow. Quantities by Mr. Chas. Marshall, 68, Bath-street, Glasgow:—

Masonry.—David Frame, Cambuslang	£2,714 15 6
Wright.—J. C. Burns & Co., Larkhall	1,412 0 0
Slating.—Robt. Harris, Maryhill	201 9 4
Plastering.—Wm. Shearer, Larkhall	190 2 2
Plumbing.—L. Taylor, Hamilton	355 2 2
Iron and Steelwork.—P. & W. McLellan, Glasgow	162 13 8
Tilework.—Yonden & Co., Glasgow	98 14 0
Furnishing.—Bennett Furnishing Co., Glasgow	279 17 9
Painting.—Russell & Craig, Larkhall	79 19 5

LLANELLY (Brecon).—Accepted conditionally for extension, &c., of school buildings, Gilwern, for the School Board. Mr. E. A. Johnson, architect, Abergavenny:—

J. G. Thomas & Sons, Abergavenny £485

LLANGATTOCK (Brecon).—For additions, &c., to school buildings, Beaufort Hill, for the School Board. Mr. W. S. Williams, architect, Tredegar:—

T. S. Foster	£460	H. Davies & Co., London	
Rees Edwards	450	House, Beaufort*	£400
John Jenkins	413	D. Vaughan	355

* Accepted.

LONDON.—For enlarging the Munster-road School, Fulham, by 389 places, for redividing the boys' and girls' playgrounds, and for other works, for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brick-work in cement, add
Foster & Dicksee	£5 335	£55 0 0
Lathey Bros.	5,313	80 0 0
R. A. Yerbury & Sons	5,255	80 0 0
J. Shillitoe & Son	5,150	80 0 0
Hart Bros.	5,053	61 0 0
W. King & Sons	4,990	90 0 0
S. & W. Pattinson	4,970	102 0 0
D. Charteris	4,909	84 7 2
Treasure & Son	4,907	73 0 0
Stimpson & Co., 78, Brompton-road, S.W.*	4,876	96 0 0

* Recommended for acceptance by the Works Committee.

LONDON.—For the erection of chimney shaft, boiler setting, &c., near Finsbury Park, N. Mr. E. Taylor, engineer:—

J. Cope	£759 0	R. Powell	£545 5
W. Neil	725 0	O. H. Kenney	497 0
Myles & Warner	650 0	Wilkinson Bros., 64, St. Thomas'-rd., Finsbury Park, N.*	474 0
J. Yates & Co.	602 0		
T. Warrington	599 0		
J. Broadhurst	575 0		

* Accepted.

LONDON.—For carrying out structural alterations and improvements to the Central-street School, St. Luke's, for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brick-work in cement, add
McCormick & Sons	£4,100	£17
Staines & Sons	4,011	30
W. Gregar & Sons	3,988	50
Charles Cox	3,773	19
Hearle & Farrow	3,752	36
G. S. S. Williams & Son	3,687	37
Vernal, Danes, & Co.	3,617	24
E. Lawrence & Sons	3,568	37
J. Grover & Son, Wilton Works, New North-road, N.*	3,557	27
F. G. Minter	3,312	50

* Recommended for acceptance by the Works Committee.

LONDON.—For refitting the teachers' offices in connexion with the Goodrich-road Schools, East Dulwich, providing a new system of drainage, &c., for the School Board for London. Mr. T. J. Bailey, Architect:—

J. & C. Bowyer	£1,793	J. Frampton	£1,415
Holloway Bros.	1,791	Garratt & Son	1,398
Lathey Bros.	1,745	B. E. Nightingale, Albert Works, S.E. *	1,395
Holliday & Greenwood	1,683		
Whitehead & Co.	1,437		

* Accepted by the Works Committee.

LONDON.—For the erection of a school on the Page's Walk site, Bermondsey, to provide accommodation for 1,174 children, which will include a house for the schoolkeeper, with a laundry centre underneath, and a manual training centre (to be erected on arches), &c., for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brick-work in cement, add
Hart Bros	£22,300 0 0	£398 0 0
W. King & Son	20,783 0 0	319 0 0
T. Boyce	20,133 0 0	375 0 0
Holliday & Greenwood	20,123 0 0	410 0 0
Lathey Bros.	19,924 0 0	319 0 0
Grover & Son	19,700 0 0	386 0 0
Holloway Bros.	19,643 0 0	318 0 0
J. Marsland	19,373 0 0	398 0 0
C. Cox	19,200 0 0	358 0 0
W. Downs	19,251 0 0	345 0 0
Treasure & Son	19,049 0 0	360 0 0
Lawrance & Sons	18,987 0 0	358 0 0
G. E. Wallis & Sons	18,686 0 0	300 0 0
J. F. Collinson, Teddington*	18,453 11 5	318 4 3

* Recommended for acceptance by the Works Committee.

LONDON.—For the enlargement of the Church-street School, Stoke Newington, by 200 places, for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brick-work in cement, add
Killby & Gayford	£2,241	£44
N. Lidstone	2,178	39
C. Cox	2,146	39
Willmott & Sons	2,145	50
McCormick & Sons	2,074	36
Grover & Son	1,959	43
W. M. Dabbs, Stamford-hill, N.*	1,931	43

* Recommended for acceptance by the Works Committee.

LONDON.—For the provision of manual training and laundry-centres in connexion with the Marlborough-road School, Chelsea, and for other work, for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brick-work in cement, add
R. A. Yerbury & Sons	£3,865 0 0	£135 0 0
W. H. Gaze	3,838 0 0	93 0 0
Holloway Bros.	3,734 0 0	91 0 0
Hart Bros.	3,589 0 0	76 0 0
Lathey Bros.	3,587 0 0	92 0 0
Foster & Dicksee	3,381 0 0	66 0 0
S. & W. Pattinson	3,277 0 0	106 0 0
D. Charteris	3,247 0 0	104 0 0
Stimpson & Co.	3,187 0 0	100 0 0
J. F. Collinson, Teddington*	3,103 4 6	80 1 10

* Recommended for acceptance by the Works Committee.

LONDON.—For sewering, levelling, paving, &c., Nightingale-road, for the Hanwell Urban District Council. Mr. S. Barnes, Surveyor, Church-road, Hanwell. Quantities by Mr. E. J. Reynolds A.M.Inst.C.E.:—

J. G. Broderick	£434 2 4	Geo. Wimpey & Co.	£374 7 6
Killingback & Co.	432 5 0	J. Ball	352 2 0
J. Mowlem & Co.	428 14 0	M. N. Rhodes	349 19 6
Nowell & Robson	419 16 7	H. Lee	344 11 9
J. Macklin	393 10 10	G. Pearce	340 9 5
H. Drury	384 1 3	W. Lee & Son	318 15 1
Free & Son	382 3 6	R. Ballard, Ltd.*	277 0 0
T. Adams	379 14 8		

* Withdrawn.

LONDON.—For providing a complete system of low-pressure hot-water apparatus for warming the Mantle-road School, Brockley, as now being enlarged, for the School Board for London. Mr. T. J. Bailey, Architect:—

Wontner, Smith, Gray, & Co.	£475 0	Vaughan & Brown	£447 0
J. F. Clarke & Sons	472 0	Wenham & Waters, Ld.	417 0
G. Davis	470 0	J. Gray, Danvers-street, Chelsea*	396 10
Purcell & Nobbs	453 0		

* Recommended by the Works Committee for acceptance.

LONDON.—On the 14th ult. the School Board for London agreed to accept the tender of Mr. J. Harvey, of Nos. 55 and 57, Red Cross-street, E.C., amounting to £1,352, for erecting a manual training centre (on arches) in connexion with the Gifford-street School, Islington. The Committee have since received a letter from Mr. Harvey regretting that, in consequence of a sudden pressure of business, he is not just now in a position to undertake the work. The Committee accordingly recommend that the resolution of the Board above referred to be rescinded, and that the second lowest tender, that of Messrs. E. Lawrance & Sons, amounting to £1,392 should be accepted, this sum being inclusive of the provision of £28 for building the brickwork in cement.

LONDON.—For providing and fixing a complete system of low-pressure hot-water apparatus for warming the school in Glengall-road, Cubitt Town, for the School Board for London:—

Fraser & Son	£514	G. Davis	£445
Wontner, Smith, Gray, & Co.	492	Z. D. Berry & Sons	443
C. P. Kinnell & Co.	475	Wenham & Waters, Ltd.	436
J. F. Clarke & Sons	460	Potter & Sons, Ltd., Oxford-street, W.*	395
W. G. Cannon & Sons	450		

* Recommended for acceptance by the Works Committee.

LONDON.—For providing and fixing a complete system of low-pressure hot-water apparatus for warming the whole of the Colls-road School, Peckham, as now being enlarged, for the School Board for London. Mr. T. J. Bailey, Architect:—

C. P. Kennell & Co.	£575 0	Wenham & Waters, Ltd.	£459 0
J. & F. May	570 0	W. G. Cannon & Sons	449 0
Fraser & Son	534 0	Potter & Sons, Ltd., 361, Oxford-street, W.*	397 0
J. & F. Clarke & Sons	499 0		
Maguire & Son	476 10		

* Recommended for acceptance by the Works Committee.

LONDON.—For extending the low-pressure hot-water apparatus from the old portion of the Broomsleigh-street Schools, Hampstead, to the enlargement of the school recently completed, for the School Board for London:—

C. P. Kinnell & Co.	£350 0 0	Z. D. Berry & Sons	£199 0 0
J. & F. May	287 0 0	J. Gray	185 15 0
Hendry & Pattison	282 18 6	Parsons & Harris	125 0 0
W. G. Cannon & Sons	264 0 0	Duffield & Co., Slough*	121 0 0
Comyn, Ching, & Co.	220 0 0		

* Recommended for acceptance by the Works Committee.

LONDON.—For providing a complete system of low-pressure hot-water apparatus at the school in Bellenden-road, Peckham, for the School Board for London:—

Comyn Ching & Co.	£540 17	Russell & Co.	£304 10
Purcell & Nobbs	422 0	Wenham & Waters, Ltd.	373 0
J. C. & J. S. Ellis, Lim.	419 10	Potter & Sons, Lim., Oxford-street *	337 0
J. F. Clarke & Sons	418 0		
W. G. Cannon & Sons	398 0		

Recommended for acceptance by the Works Committee.

LONDON.—For redrainage and other sanitary work at the Northern Dispensary, Little Union-place, Lisson Grove, N.W., for the St. Marylebone Guardians. Mr. A. Saxon Snell, architect:—

George Smith	£547 0	Buckeridge Bros.	£283 15
Hatfield & Son	433 0	C. W. Killingback & Co.	
Thompson & Beveridge	368 0	Camden Town, N.W.*	275 0
H. Wall & Co.	289 0		

* Accepted.

LONDON.—For providing and fixing a new boiler and mains in connexion with the existing low-pressure hot-water apparatus at the Townsend-street School, Old Kent-road, for the School Board for London:—

W. G. Cannon & Sons	£167 0	Z. D. Berry & Sons	£139 0
G. Davis	165 0	Fraser & Son	138 12
J. C. & J. S. Ellis, Ltd.	164 10	C. P. Kinnell & Co.	132 0
R. H. & J. Pearson, Ltd.	145 19	Maguire & Co., Dublin	119 6

* Recommended for acceptance by the Works Committee.

NEWPORT.—For additions to Eveswell Schools, Newport, for the Newport School Board. Mr. Benj. Laurence, architect, Newport:—

T. G. Diamond	£1,420	Wm. Price	£1,342
Geo. Wilkins	1,403	Jas. Davies	1,336
J. Jenkins	1,400	Dyson Parfitt	1,295
C. H. Reed	1,368	J. T. Morris	1,249
T. Westacott	1,367	J. Linton*	1,225
E. C. Jordan	1,360		

* Accepted.

NEWPORT.—For additions to Marshes-road School, Newport, for the Newport School Board. Mr. Benj. Lawrence, architect, Newport:—

Thos. Webber	£3,500	T. Diamond	£3,304
Dyson Parfitt	3,398	E. C. Jordan	3,204
Geo. Wilkins	3,398	J. T. Morris	3,104
Wm. Price	3,376	Jas. Davies	3,180
John Jenkins	3,345	C. H. Reed	3,132
John Linton	3,300	Tom Westacott (accepted)	2,905

NOTTINGHAM.—For the erection of public baths, Sneinton for the Corporation. Mr. Arthur Brown, C.E., Borough Engineer, Guildhall, Nottingham:—

J. Hutchinson	£14,737 14 6	J. Hodson & Son	£14,427 0 0
F. Evans	14,725 10 0	A. B. Clarke	14,216 16 8
J. F. Price	14,567 19 6	H. Vickers	14,212 0 0
Dennett & Ingle	14,461 19 6	F. Messom†	14,000 0 0
T. Barlow	14,453 10 0	J. J. Adams†	13,875 9 10

* Accepted. † Informal.

[All of Nottingham.]

NOTTINGHAM.—For the erection of public baths, by the side of the River Trent, for the Corporation. Mr. Arthur Brown, C.E., Borough Engineer, Guildhall, Nottingham:—

E. C. & J. Keay, Ltd.	£1,421 12	J. Taylor & Sons	£1,230 12
J. F. Price	1,395 7	H. Vickers	1,190 0
J. Attenborrow	1,351 19	F. Messom	1,049 0
Goddard, Massey, & Warner	1,310 10	W. H. Raynor & Son, London-road, Nottingham (accepted)	995 0
H. H. Barry	1,264 16		
T. Barlow	1,236 0	W. Gell & Son	989 0

PERTH (N.B.).—Accepted for the erection of the Wilson United Presbyterian Church. Mr. J. B. Wilson, architect, 112, Bath-street, Glasgow. Quantities by Mr. Campbell, surveyor, Perth:—

Masonry.—Fraser & Morton, Perth			£5,009 0 0
Wright.—Thos. Jorgan,	,,		1,649 0 0
Slating.—Jas. Buchan,	,,		210 0 0
Plumbing.—Frew & Sons,	,,		191 17 3
Gasfitting.—	,, ,,		101 10 0
Plastering.—Mackay & Son,	,,		291 18 1
Painting.—Stalker & Boyd,	,,		143 0 0
Glazing.—Meikle & Son, Glasgow			115 0 0

PETERBOROUGH.—For pulling down buildings and erecting house and shop, Cowgate. Mr. J. G. Stallebrass, architect, North-street, Peterborough:—

Rome	£700 0	Bailey	£559 0
Pape	655 0	Guttridge	526 0
Cracknel	623 0	Hicks	509 4
Binder	610 0	Nichols	505 0
Gray	570 0	Bridgefeet	487 0
Jellings	565 10	Sibley (accepted)	485 0

[All of Peterborough.]

SALISBURY.—For the erection of school buildings, Board-room, &c., Downton, for the School Board. Messrs. John Harding & Son, architects, 51, Canal, Salisbury:—

A. J. Matthews	£4,500 0 0	Webb & Co.	£3,768 0 0
Kellow & Smith	4,045 0 0	W. Q. Cole	3,749 0 0
G. Harris	3,985 0 0	F. Beale	3,717 0 0
E. Witt	3,950 0 0	J. Bailey, Downton*	3,653 7 0
Wort & Way	3,909 10 6	Vincent & Folland	3,600 10 0
Ed. Hale	3,900 0 0	Jenkins & Sons	3,579 0 0

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WILLESDEN GREEN.—Accepted for the erection of cottage, Chapter-road:—

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SHEFFIELD.—For cottages at Button-lane, Sheffield, from plans and quantities prepared by Mr. C. F. Wike, C.E., City Engineer:—

Holmes	£1,687 13 0	Ashton & Biggin	£1,533 0 0
J. Wheen	1,664 0 0	W. May	1,490 0 0
A. Duke	1,634 12 4	Bradbury	1,434 12 7
Hurst	1,627 18 0	J. Morton	1,422 14 9
Ashforth	1,622 0 0	Roper	1,379 10 0
White	1,600 0 0	J. Eshelby, Spring-street * (accepted)	1,328 5 0
Walker & Slater	1,555 0 0		

[City Engineer's estimate, £1,435.]

WIMBLEDON.—For the erection of two houses in Worple-road, Wimbledon, S.W., with combined back drainage. Mr. Robert Thomson, architect and surveyor, Hill-road, Wimbledon, S.W.:—

G. Davenport	£2,830 0	Lorden & Son, Tooting (accepted)	£2,678 15
Holloway Bros.	2,773 9		

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M. & B. (amounts should have been stated).—J. M. (thanks; we had seen the sketches).

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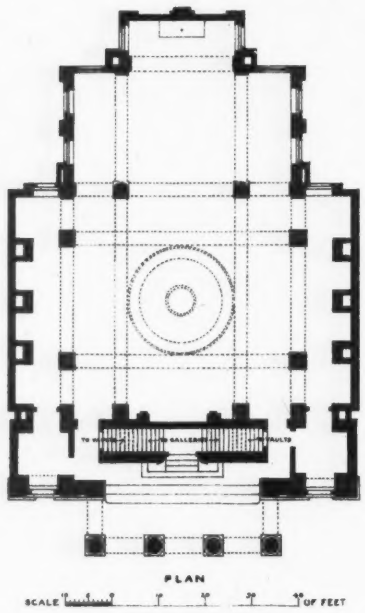

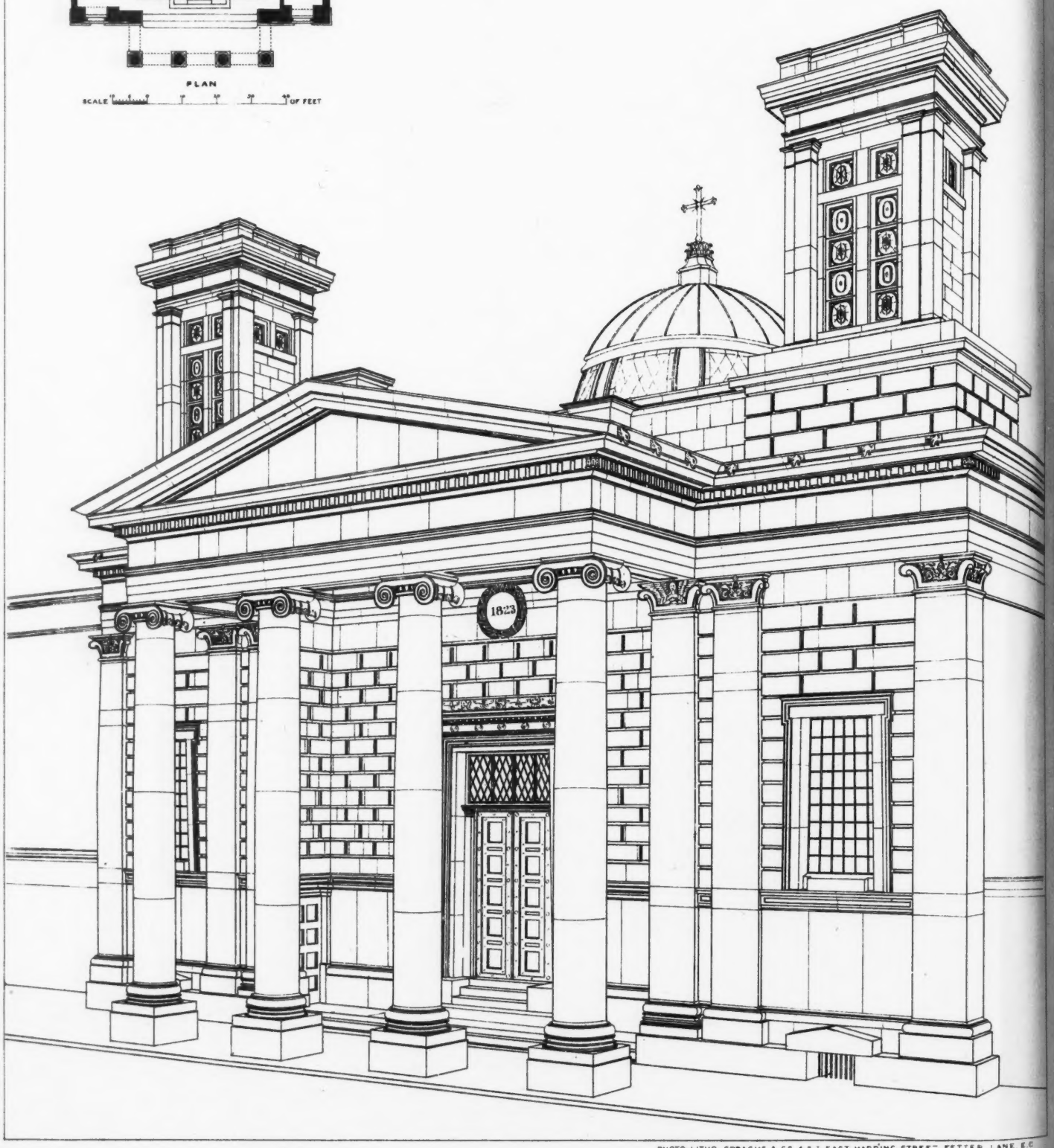

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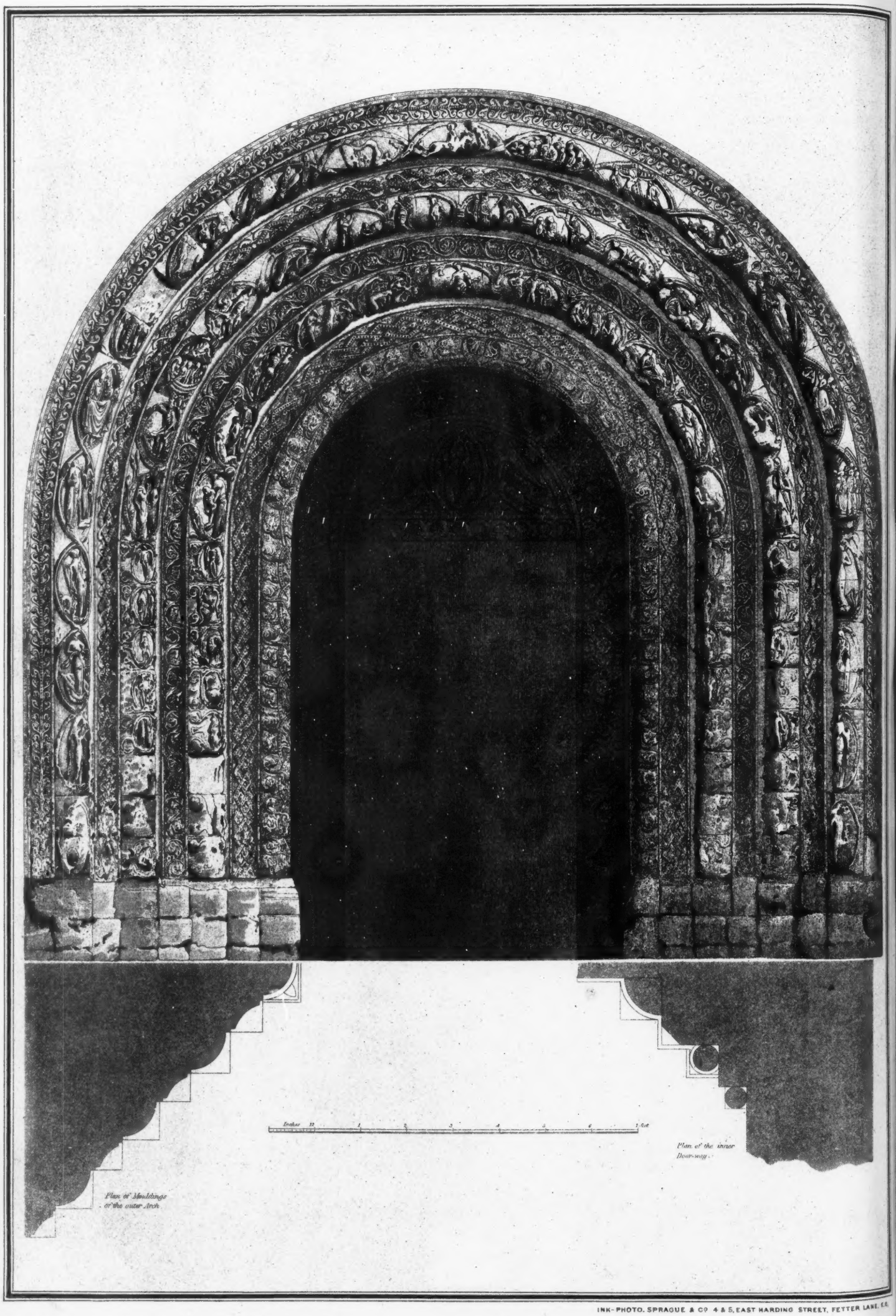

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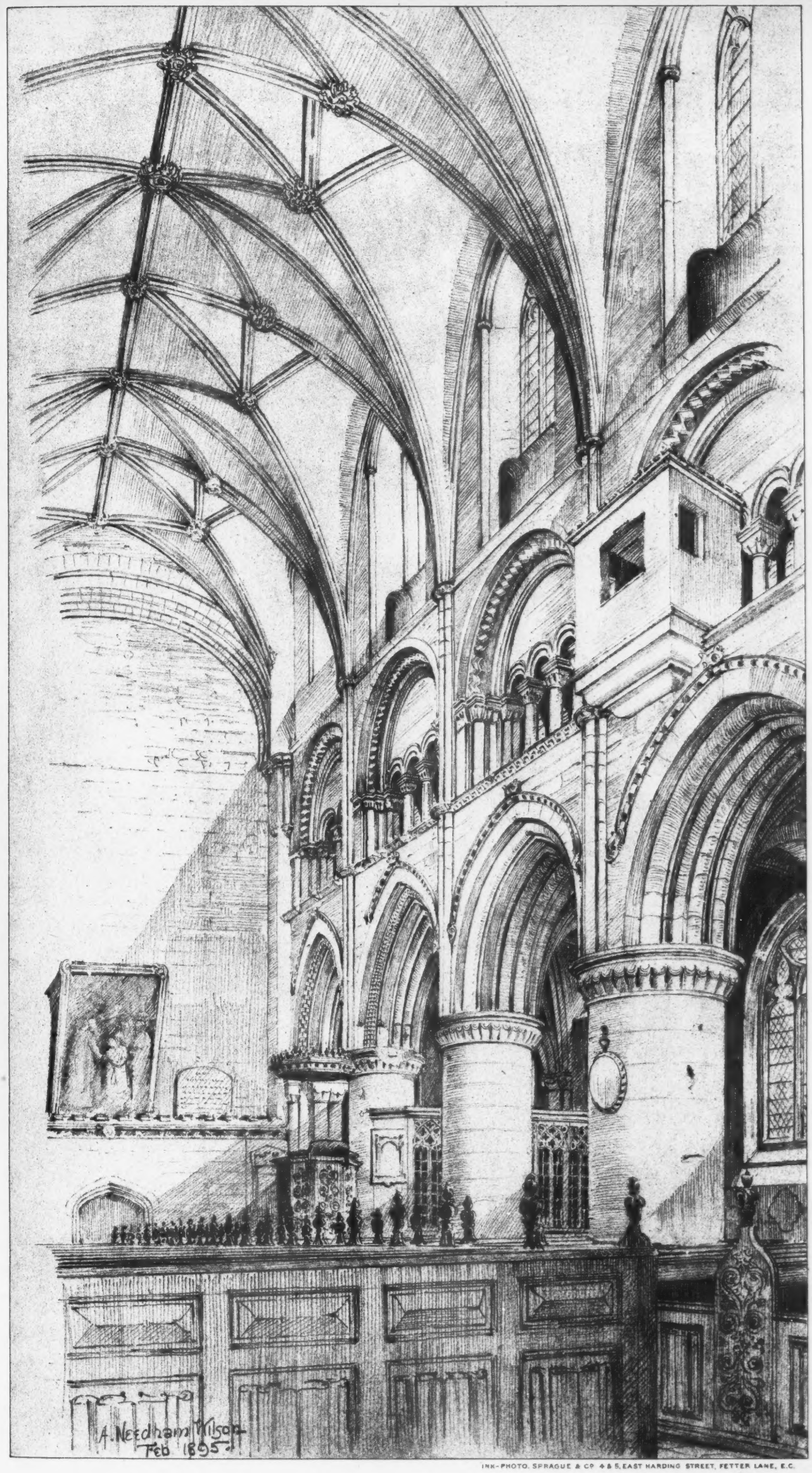

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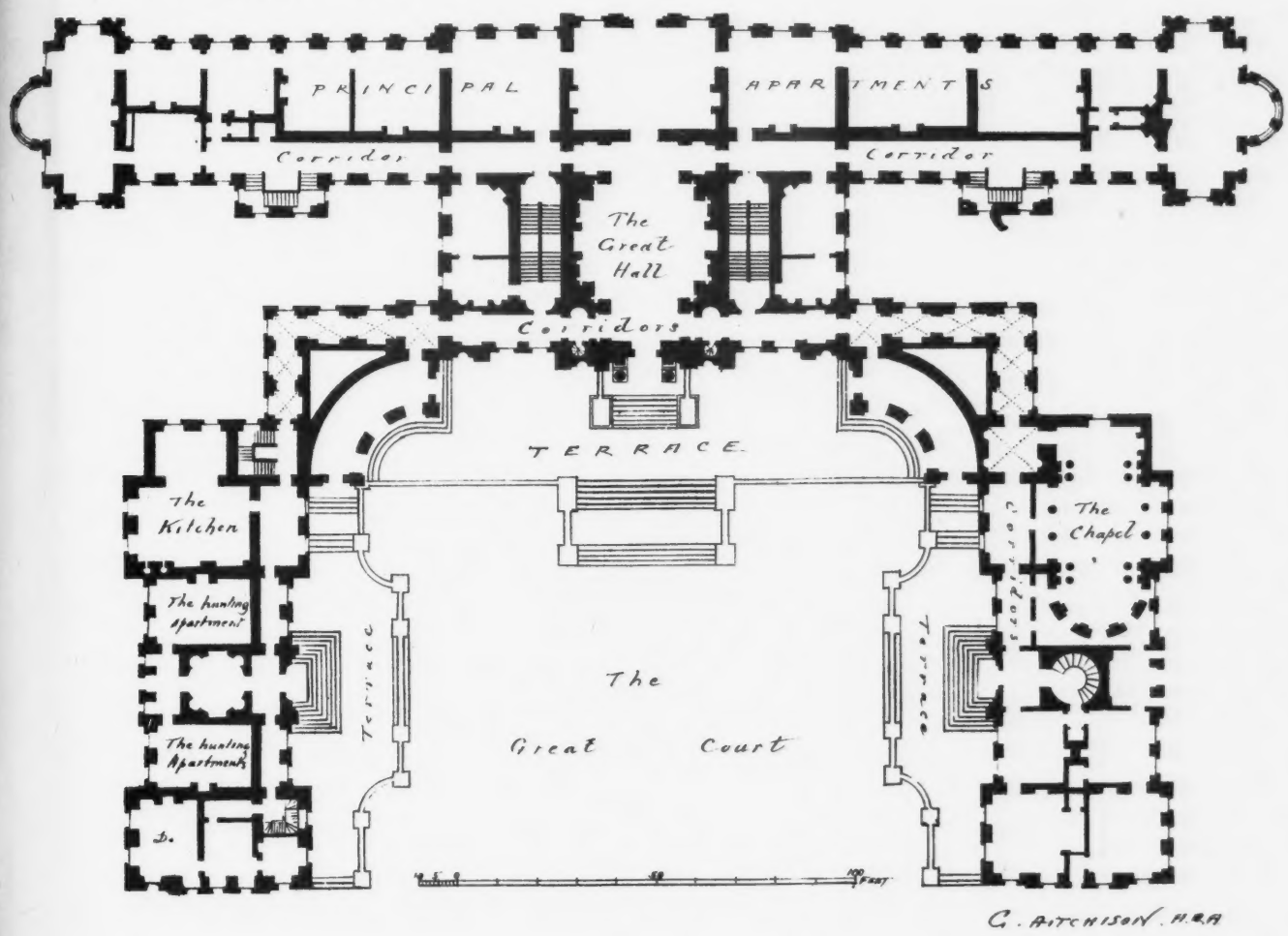

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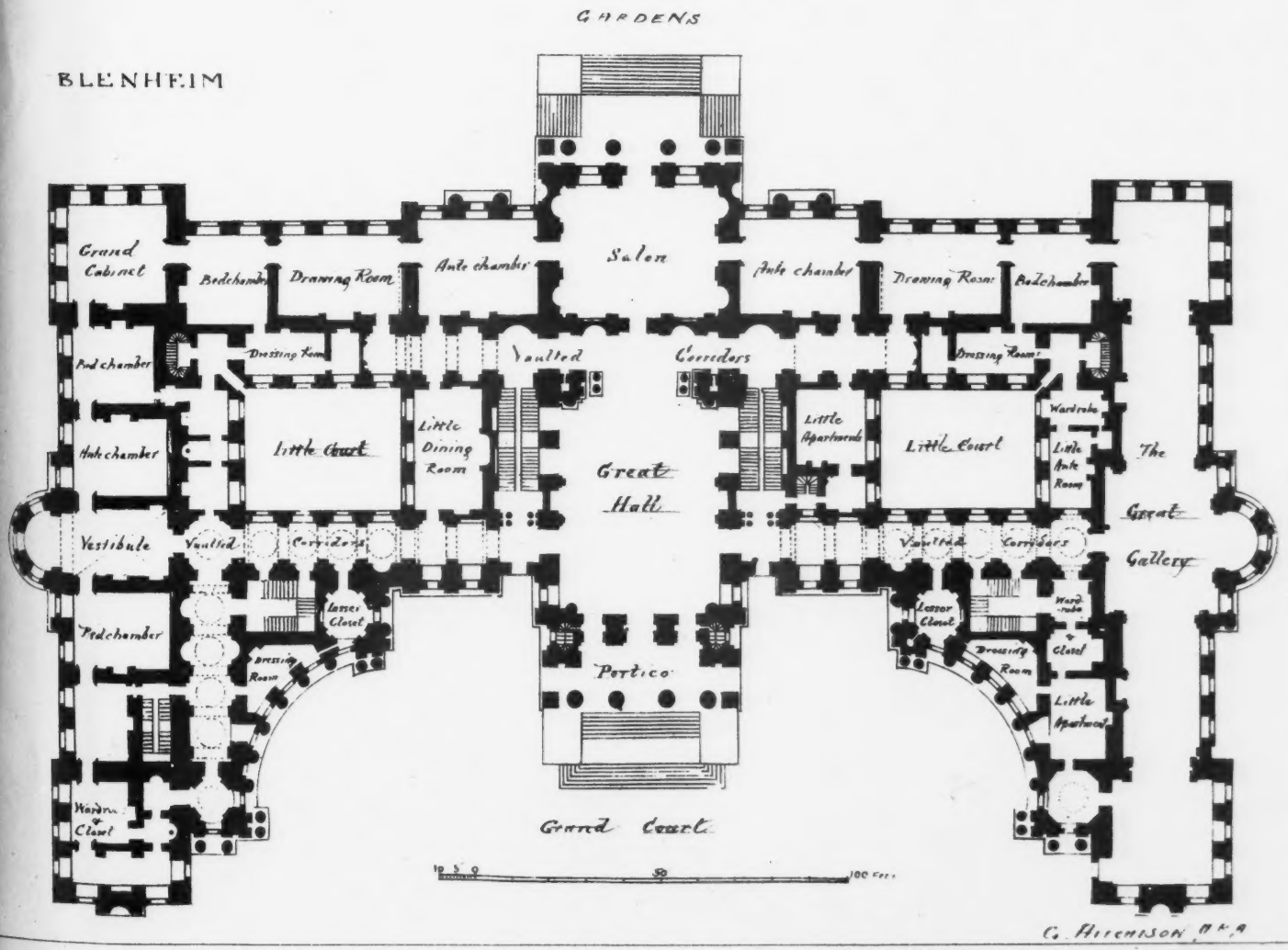

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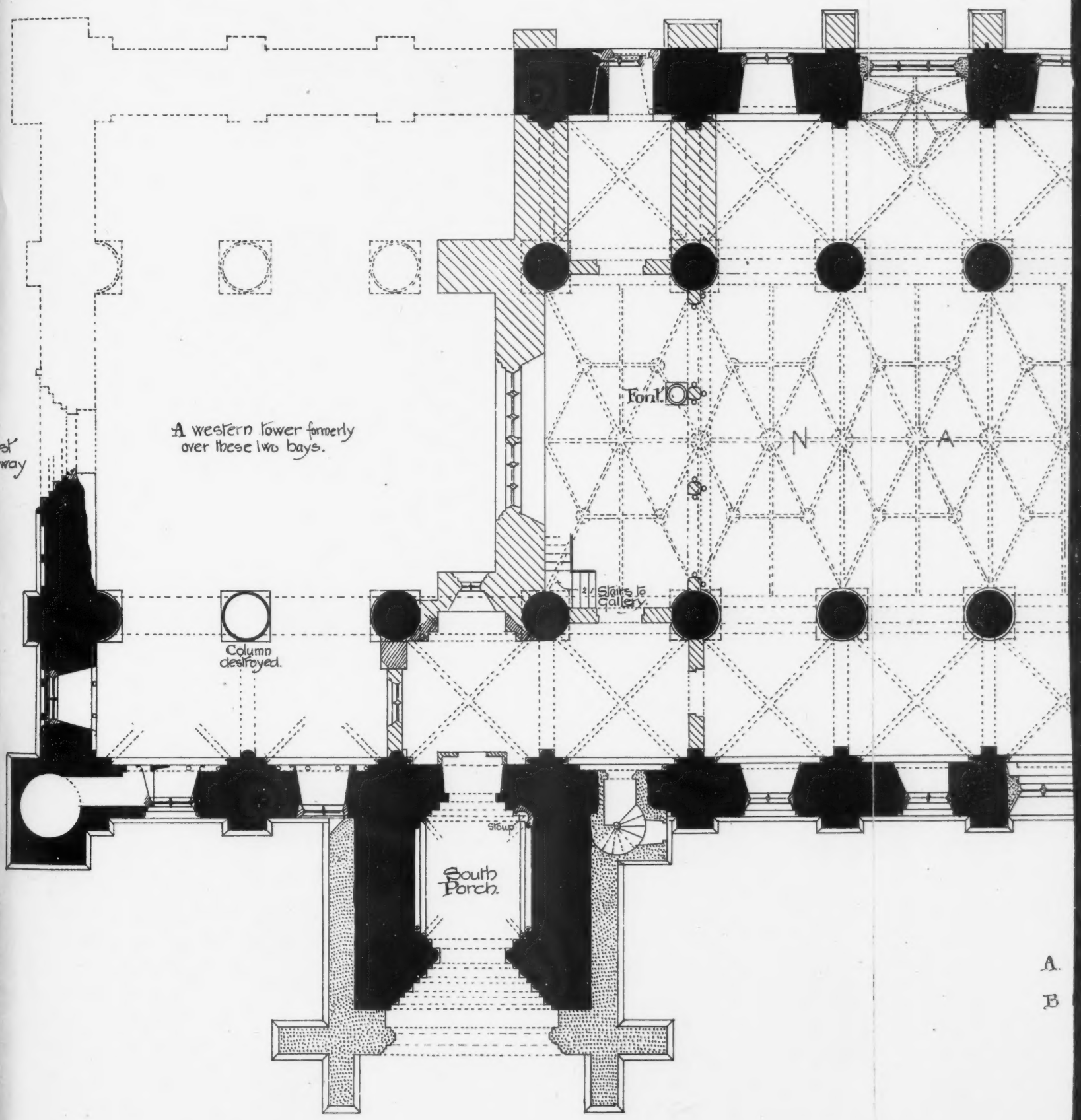

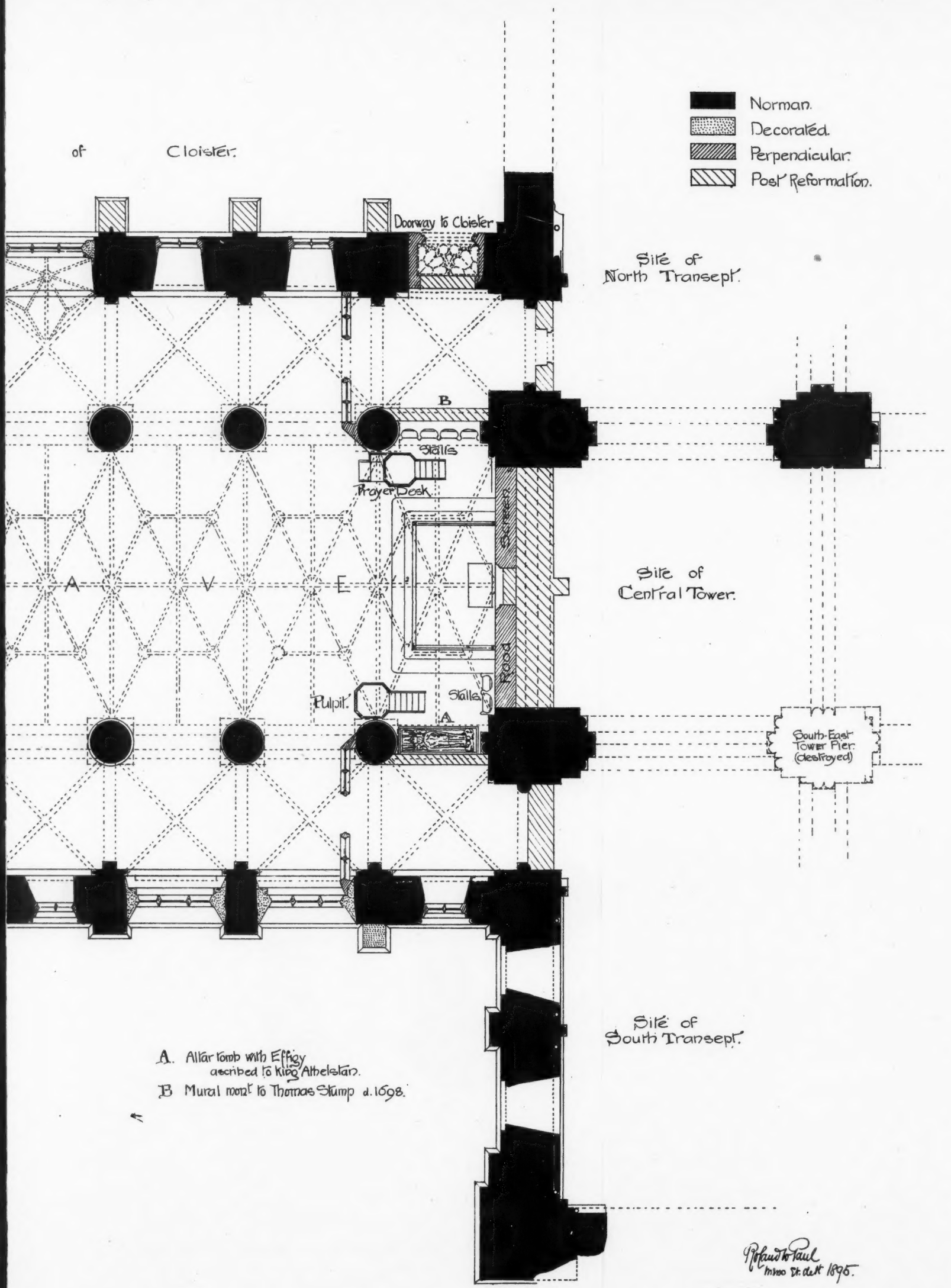

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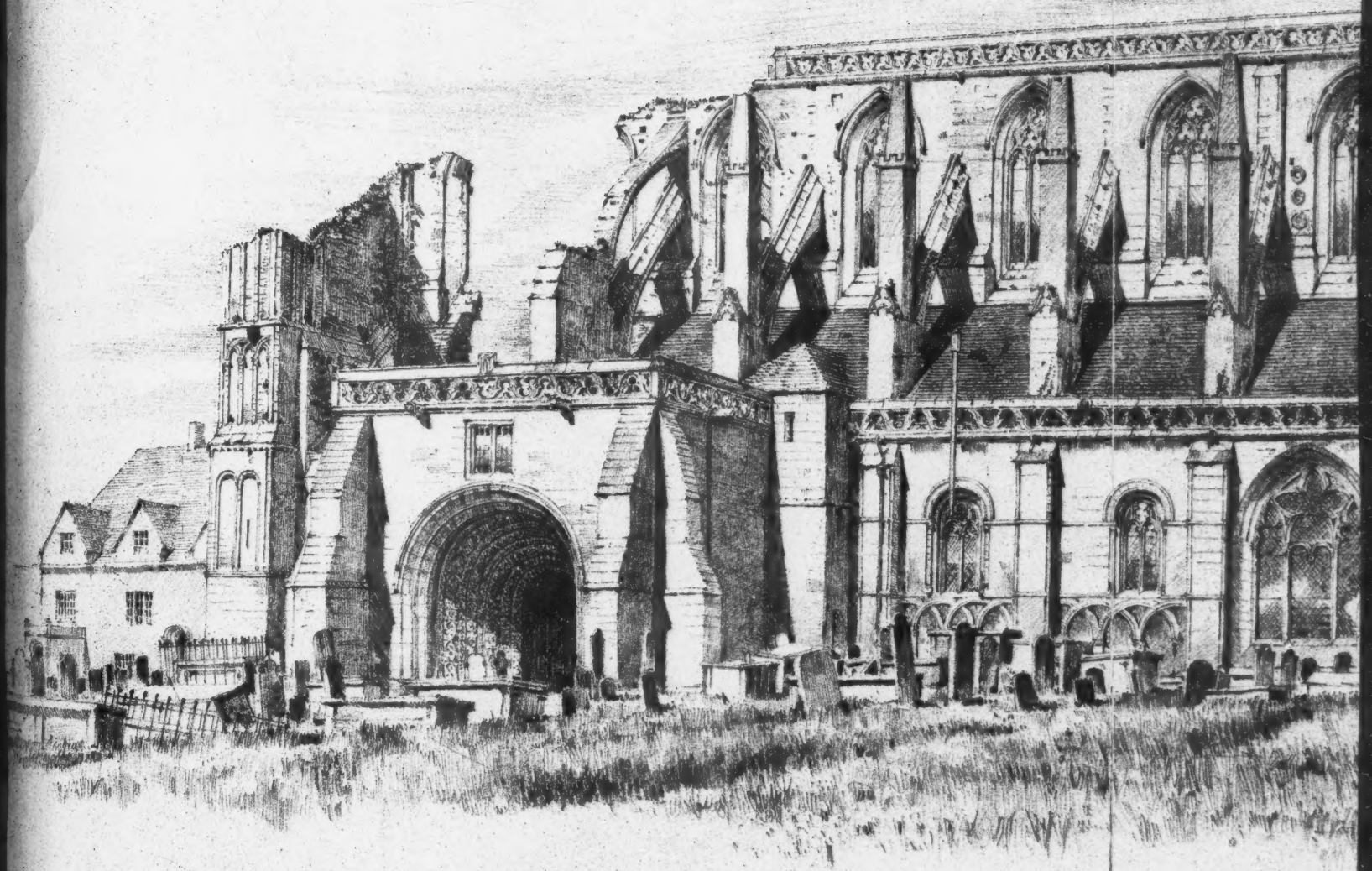

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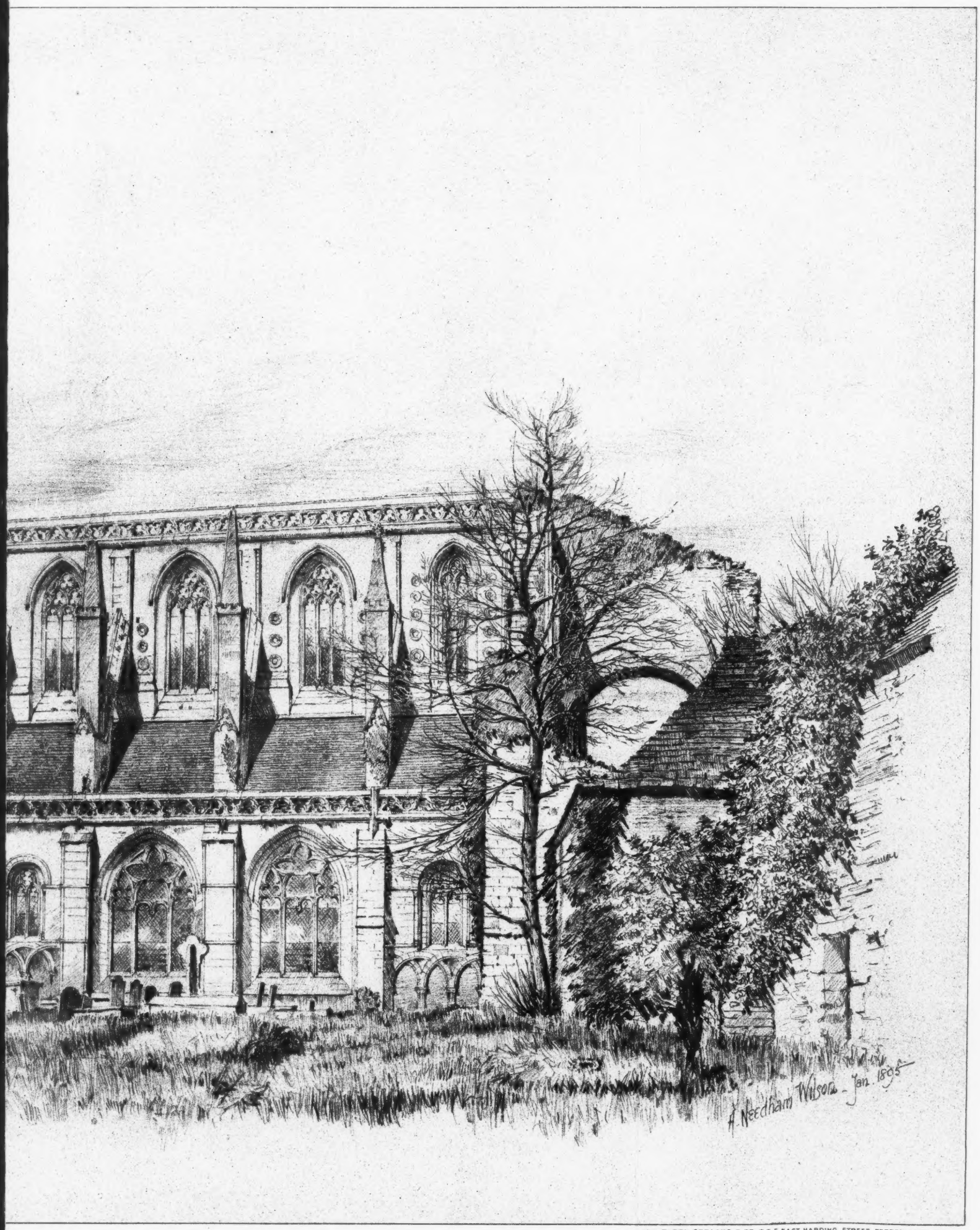

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